

PURCHASING

May, 1946



CHARLES L. SHELDON
PRESIDENT, N. A. P. A.



**LET
EFFECTIVE
LUBRICATION**

HELP ADVANCE YOUR SHIPPING DATES

EFFECTIVE *Texaco* lubrication keeps machines operating efficiently, reduces downtime for servicing and maintenance. Your production goes up accordingly. In addition, Texaco Lubricants and Lubrication Engineering Service help you improve quality, cut rejects and lower costs.

There are service-tested Texaco Lubricants to keep every machine in your plant running smoothly . . . and Texaco's Lubrication Engineering Service—available to Texaco users—will see to it that you use the *right* lubricant, in the *right* amount, in the *right* place.

Also important to you—Texaco's nationwide facilities enable you to centralize purchases for all your plants and get local delivery service right to your receiving platforms. For effective, cost-saving lubrication and service, Texaco is definitely preferred in many fields.

Find out what Texaco can do for *you*! Call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write

☆☆☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



**TEXACOLubricants, Fuels and
Lubrication Engineering Service**

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT STARRING JAMES MELTON WITH HIS GUEST, ED WYNN—CBS

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PURCHAS



DETROIT
Century Form 1 motors driving a battery of automatic screw machines where tolerances are often held to .00025".

CENTURY MOTORS'

Unusual Freedom From Vibration Helps
You Produce Precision Parts With

**CLOSER
TOLERANCES** ←

SMOOTHER SURFACES ←

FEWER REJECTS ←



Century motors are widely known for their ability to run smoothly and quietly — and with an unusual freedom from vibration. On machine tools this means that production parts, tools, dies, or fixtures are more accurate because vibration is not transmitted to the driven machine.

Precision built to match the precision of the machines they drive — Century motors stand up under the toughest kind of operating conditions. Rugged frames, accurately machined feet, accurately aligned bearings, and many other features contribute to their outstanding performance.

Engineered to the functional characteristics of the machines they drive to assure top performance — Century motors are a vital factor in producing a better product at a lower cost.

Century motors are available in AC or DC types and sizes from 1/20 to 600 horsepower. Specify Century motors on all your electrically powered equipment.



460

CENTURY ELECTRIC COMPANY • 1806 Pine St., St. Louis 3, Missouri

Offices and Stock Points in Principal Cities



Why did they cover covered bridges?

THEY COVERED COVERED BRIDGES TO keep them from decaying. Many people believe that decay is just "old age" in wood, but this isn't true. Decay is caused by a fungus growth which has long, threadlike tentacles that bore into the cells of the wood. Fungi must have moisture, air and food to live. If you cut off any one of these three, the fungi cannot live and wood will last almost indefinitely.

Our forefathers made their bridges last longer by building a "shed" over them. That cut off most of the moisture from the trusses, decking

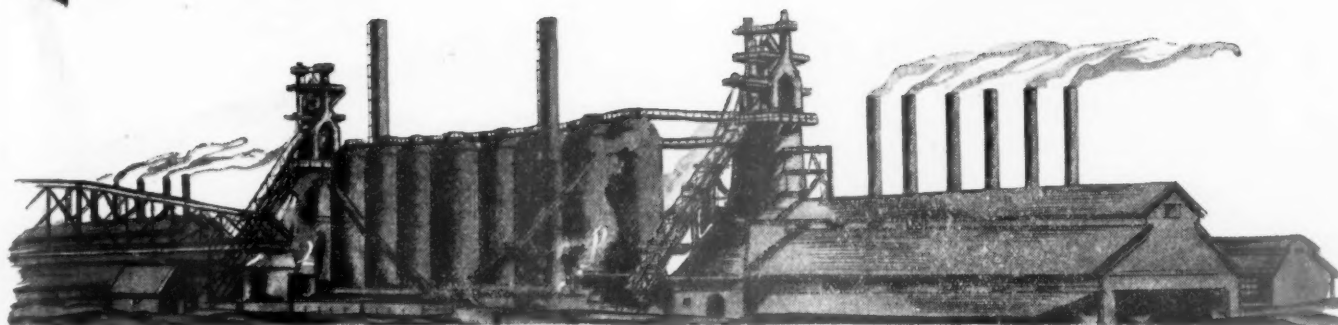
and stringers of the bridge. Today, we make wood last for years and years by cutting off a different essential need of fungi . . . food.

By modern wood preserving methods, coal tar creosote or chemical salts are forced deep into the cells of wood and poison the food supply of the fungi.

Koppers operates 21 plants in which this pressure treating is done. Other of its plants produce creosote which is the best wood preservative. Koppers helps save millions of dollars of damage to bridges, cross ties, poles, piling and structural tim-

ber, and helps make wood the durable, adaptable, all-purpose building material it should be. Send for a copy of the booklet "Economical and Permanent Construction with Pressure-Treated Wood."—Wood Preserving Division, Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pennsylvania.

The Industry that serves all Industry



Supplying Steel

Is Only Part of Our Service

Cooperating to get the ultimate in ductility, hardness or a special balance of these properties for a specific purpose; or aiding in the solution of a perplexing problem of fabrication which might otherwise prove costly, is also part of Inland service.

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No matter how difficult or exacting the specifications, you can always depend on the closest cooperation and teamwork from Inland. Our staff of specialists backed by modern plants operating under rigid standards and efficient scheduling, assure processors, fabricators and users the greatest dependability from steel.

Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill., Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Paul, St. Louis.

PRINCIPAL PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • FLOOR PLATE • PILING • REINFORCING BARS • RAILS • TRACK ACCESSORIES.

INLAND STEEL COMPANY



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★ **ALLEGHENY METAL**, the time-tested stainless steel, is produced in types and grades to meet any ordinary or special requirement, and in all necessary forms and shapes—backed by any needed assistance from our Technical or Research Staffs.

★ **Allegheny Metal** is also handled and carried in stock by all Ryerson warehouses.

ALL the various commercial grades of stainless steel have reason and meaning. Here's the data you need to match up the proper grade of Allegheny Metal with the product whose efficiency, appearance or service life you want

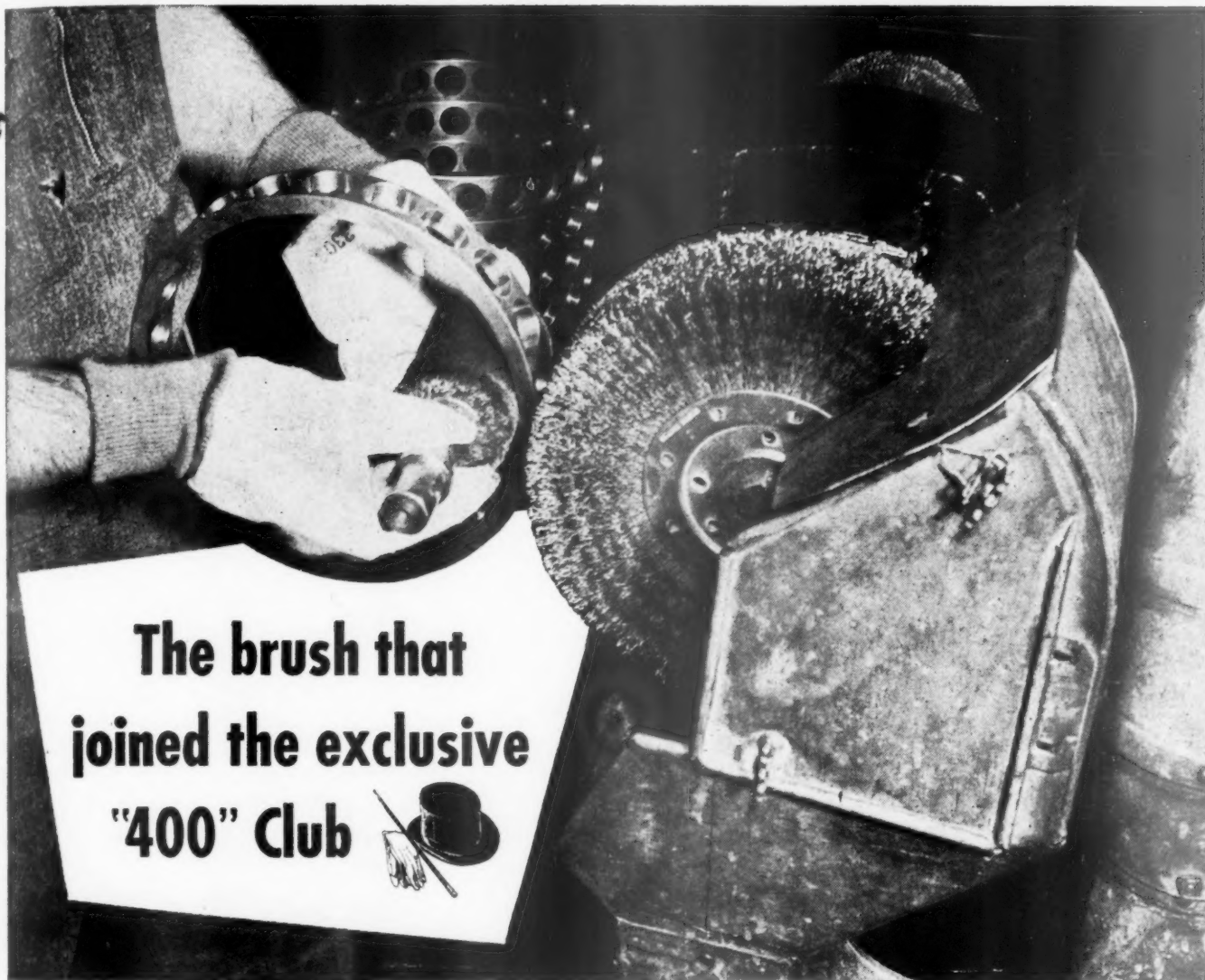
to improve . . . the problem of corrosion and heat resistance, sanitation or maintenance you want to solve . . . the methods of fabrication you need to use. You'll find this new 100-page Handbook an invaluable mine of handy information.

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STEEL CORPORATION · General Offices, Brackenridge, Pa.

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**The brush that
joined the exclusive
"400" Club**



Photo courtesy of Marlin-Rockwell Corp., Jamestown, N. Y.

ANY tool that can improve production on any operation by 400% is entitled to a place among industry's upper crust—which is a great deal more significant honor than that envisioned by Ward McAllister when he originated his famous "400".

Such a tool is the Osborn Monitor Wheel, shown above deburring and removing sharp edges on the outside of ball bearing separators, while a group of Osborn Ringlocks finish the inside diameter at the same time. One operation thereby replaces two much slower ones and results in much finer, more uniform work and better-performing parts.

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better by the correct use of brushing tools and new brushing techniques developed by Osborn, 50-year pioneer in the field.

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THE OSBORN MANUFACTURING COMPANY
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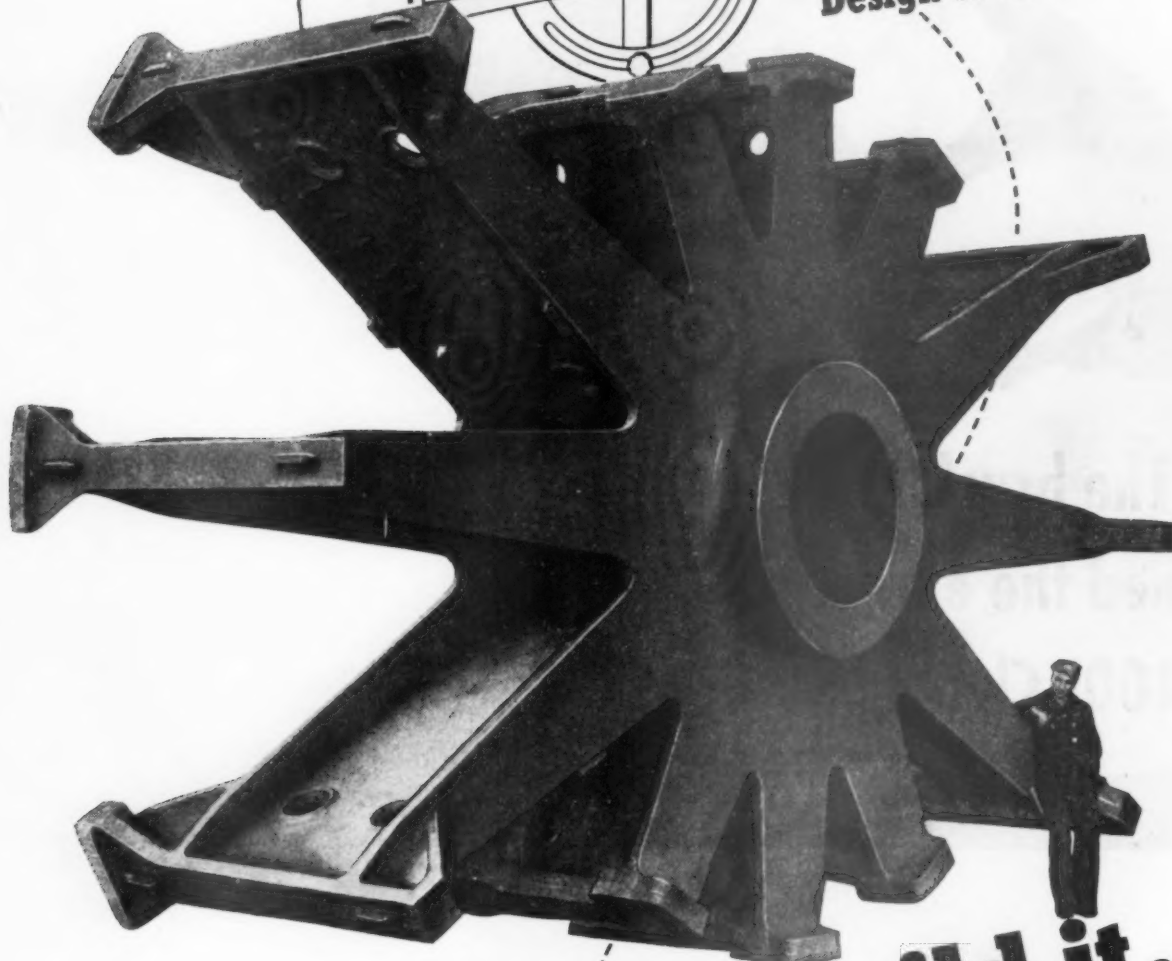


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Design it small ...



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J&L WIRE ROPE
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STEEL**

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GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, PENNSYLVANIA

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of paint...*

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*KEEPS ITS STIFFNESS IN PAINTS
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PLATE GLASS COMPANY



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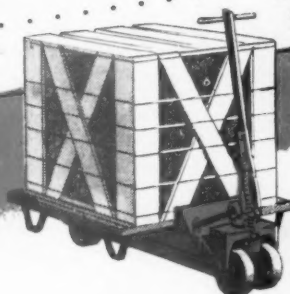


**It Costs \$3.90
to store THESE Crates**

LABOR	-Two Men, 35 Minutes	\$1.40
SPACE	-50 Square Feet	2.50
		\$3.90

86¢ for THESE

LABOR	-Two Men, 9 Minutes	\$.36
SPACE	-10 Square Feet . . . . .	.50
		\$.86



THE ONLY DIFFERENCE IS BARRETT EQUIPMENT! A Barrett Lift-truck enables *one man* to move crates *faster than two*. A Barrett Portable Elevator stores them in *one-fifth* the floor space. One-fourth the time, one-fifth the floor space—and look at the difference in cost!

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are turning to this storage team—*Barrett Lift-trucks and Barrett Portable Elevators*. They're saving time . . . saving labor . . . boosting storage space by 200%, 300%, even 400%. Any Barrett engineer will be glad to show you how it's done—without cost or obligation.

Write today for your free copy of the Barrett Junior Catalog. It's filled with handling tips to save money for you.

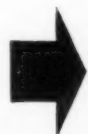


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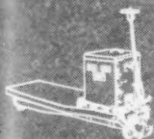
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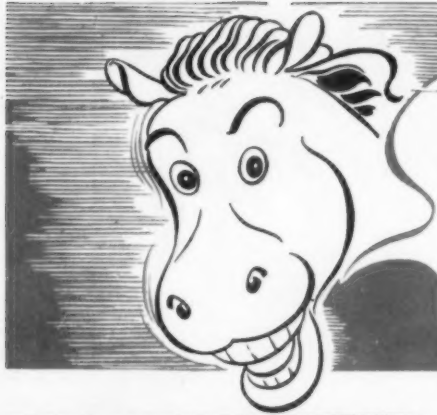
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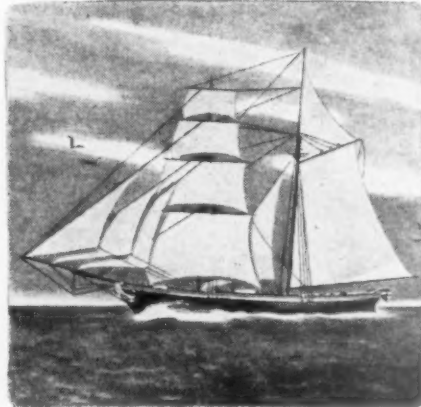


Old Reliable Red Band Says—

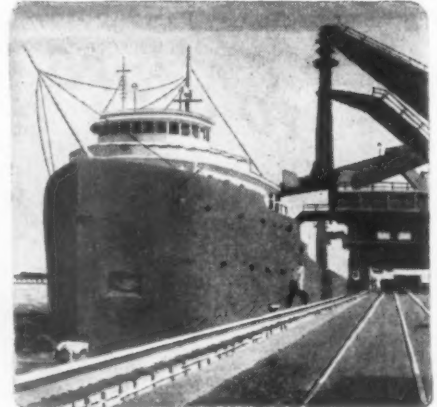
**"Ore used to ride
Piggy-Back!"***



1 In 1855, the first lake shipment of ore reached Cleveland from the iron ranges of Lake Superior. Unloading the cargo of even a small sailing vessel meant four or five days of unremitting toil. The ore had to be carried piggy-back from ship to shore!



2 In the early 1860's, unloading time was cut in half. Men down in the hold shoveled ore into tubs. Teams of horses on the docks pulled up the tubs. With as many as 40 horses, unloading a brig like the 132-ton Columbia, above, required several days.



3 In 1899, electrically operated Hulett unloaders made handling easier, quicker, cheaper. Today, Hulett's empty a 14,275-ton cargo in less than 3 hours. Howell has specialized in motors for material handling and other industrial needs since 1915.

Have you a hard job for Horsepower?

Howell Motors are better than ever today. The reasons: Years of experience in building industrial type motors to meet the exacting requirements of the automotive, machine tool, dairy, food, and other important industries.

Howell Motors are quality-motors. They are smooth-operating because they are statically and dynamically balanced. They are better performing because they are built of

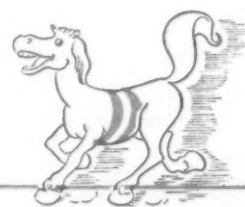
the finest materials—copper or bronze rotors—and completely insulated. They are trouble-free on the job because they are designed for the toughest tasks in industry—consequently, they perform better on all jobs.

For your needs, in specialized or standard motors, phone the nearest Howell Representative. Remember, you pay no more for industrial type Howell Motors . . . but you always get top quality for your money.

**Another historic story by Old Reliable Red Band*



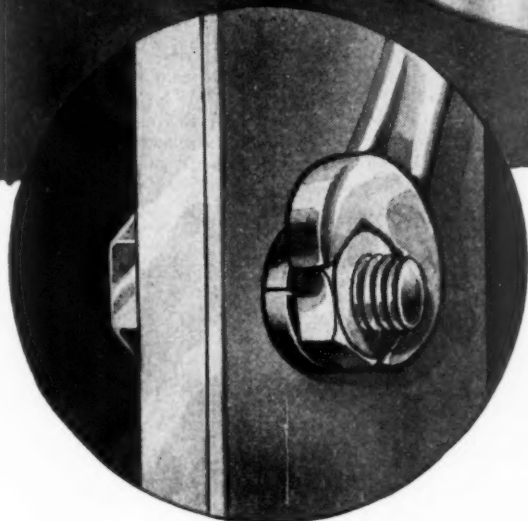
Howell Protected Type Motors available in sizes 5 h.p. and smaller. Also other sizes of Howell industrial type motors available up to 150 h.p.



HOWELL MOTORS

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AS BEARINGS

For utility, economy and efficiency you can't beat a spring lock washer as a bearing. It acts as a thrust washer... prevents the assembly working loose... and at the same time is available at the lowest cost.

But there is a difference in lock washers. Try a Diamond G with Controlled Tension! Tension built right in it, and you'll know why. Diamond G Lock Washers provide positive spring tension... plus

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Remember, for safety it's Diamond G! For quality it's Diamond G! For quick deliveries it's Diamond G! Write today for samples and the new folder giving you complete details on the new ASA and SAE specifications on spring lock washers.

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FREE

"Know-How" Information

USE PREPAID POST CARD — PAGES 19 & 20

☐ **1. BOLTS, NUTS**—Special, unusual and standard design bolts and nuts from carbon, alloy, and stainless steels and non-ferrous metals, required by utilities, machine tool manufacturers, oil refineries, chemical industry and other industrial plants are illustrated in colorful, detailed list catalog issued by Harrison Bolt & Nut Co., Divn. of Baltimore Foundry & Machine Corp. You should have copy.

☐ **2. ROPE**—"How to Put Rope to Work in Industry" is title of booklet available from Plymouth Cordage Products. It tells how to make more efficient use of rope, and describes Plymouth ropes made of Nylon, Saran, glass and other materials.

☐ **3. COPPER & BRASS WELDING**—"Chase Welding Rods" is title of booklet available from Chase Brass & Copper Co., tells about the welding of red brass and copper, the use of copper and copper alloy welding rods in the welding of steels, and the Chase line of welding rods.

☐ **4. TRANSPARENT ENVELOPES**—Kleer-Vu Plastic envelopes offer low-cost way to keep factory records, job cards, etc. clean and free of dirt and grime, thus helping to avoid errors. Sample is available for the asking. American Plastic Products.

☐ **5. ALLOY STEEL FORGINGS**—"FCC Products & Services" is title of booklet on alloy steel forgings issued by Forging & Castings Divn. of Allegheny Ludlum Steel Corp. It describes FCC smooth hammered forgings of Allegheny Ludlum tool and stainless steels, FCC tool steels, SAE steels, NE steels, and other steel specialties.

☐ **6. FLOOR RUNNER**—Sample of Rubber-like floor runner which is rugged and serviceable, and can be put down without cementing, is available from Bird & Son. Water doesn't make it slippery. Can be used in factories, schools, offices, etc.

☐ **7. INDUSTRIAL TRUCKS**—Catalog No. 50 describes the complete line of Fairbanks trucks for industrial uses. You should have copy in your materials-handling equipment file.

☐ **8. PURCHASE CONTROLS**—Booklet available from A. B. Dick Co. entitled "Complete and accurate Control over all Purchases Parts and Raw Material" tells about simple method of handling Purchasing, Receiving and Inspection paper

work. One writing produces all the copies for all three forms. Check No. 8 for copy of this practical booklet.

☐ **9. FASTENERS**—Net price catalog has been issued by the Manufacturers Screw Products. It is termed an up-to-date encyclopedia and specification chart for Purchasing Agents. Get copy for your fastener file.

☐ **10. AIR HOISTS**—Bulletin A-4-B describes Curtis hoists which are described as being "immune to abuse from overloads, light in weight and provide finger-tip one-man control of loads. Curtis Pneumatic Machinery Divn.

☐ **11. FIRE PROTECTION**—Handbook "How to Fight Fires with Carbon Dioxide" is available from Randolph Laboratories, Inc. Randolph extinguishers are described.

☐ **12. DECALS**—Practical slide-rule selector which is designed to indicate the right decal for product trademarks, instructions, patent data or diagrams, according to surface of material, use requirements, etc. is available from The Meyercord Co.

☐ **13. POLISHING, BUFFING, BURRING**—Booklet describes "The Lea Method of Polishing, Buffing, Burring". Case studies of finishing various products of different metals showing operations eliminated by the Lea method are charted. Lea compound, and Learok for production of mirror finish, are described. The Lea method is said to produce brushed or satin finishes with the elimination of the final washing and drying operations, and the elimination of or substitution for polishing wheels in the finer numbers by the use of a dry, abrasive-coated wheel with a flexible surface. The Lea Mfg. Co.

☐ **14. INDUSTRIAL PROTECTIVE Clothing**—Ten-page catalog section on its complete line of industrial protective clothing has just been issued by the B. F. Goodrich Co. Recent additions to the line are vinyl-resin industrial coat that cannot be stained by oil and grease, and Ameripol coated apron which is said to be proof against practically every acid and solvent used commercially.

☐ **15. STEEL TREATING**—"Scientific Steel Treating Close-Ups" is the title of booklet issued by the Lakeside Steel Improvement

Co., describing metal treating services—flame hardening, annealing, Aerocasting liquid carburizing, heat treating, nitriding, cyaniding, normalizing, carburizing, etc. Rear cover carries hardness conversion table.

☐ **16. CHAIN**—"Manganese Steel Chain for Elevating and Conveying" is title of booklet bulletin 742-CN published by American Manganese Steel Division of Am. Brake Shoe & Foundry Co. Standard elevator and conveyor chains, steel industry chains, dredging chains, saw mill and paper mill chains and other types are illustrated.

☐ **17. PUMPS**—Flow-Master pumps, which handle light, volatile materials or heavy, viscous materials, which transfer, meter or proportion, which work on high or low pressure, maintain volumetric efficiency, have automatic take-up shaft seals, and are stainless, sanitary, and easy to clean, are described in bulletin issued by Marco Co., Inc.

☐ **18. MOLDED SYNTHETIC Rubber**—"Mechanical Molded Parts of Synthetic Rubber" is title of booklet issued by Aero-Seal Rubber Products. Synthetics include Neoprene, GRS, Buna-N, Thiokol and Butyl. Among the products illustrated are diaphragms, boots, bellows, vee-packing assemblies, gaskets, special shapes and others.

☐ **19. LEATHER PACKING**—If you are buying parts made of leather you will want copy of new edition of Chicago Belting Company's data book "Hydraulic and Pneumatic Leather Packing, Design and Application." This is new issue.

☐ **20. SHIPPING ROOM SUPPLIES**—"Shipper's Handy Helper" is title of catalog issued by Diagraph-Bradley Stencil Machine Corp. Stencil machines, stencil board, ink, brushes, moisteners, tackers, staplers, strapping and wide assortment of shipping room supplies and tools are covered.

☐ **21. PLASTIC HAMMER**—Circular describes the "Kant-Mar" plastic hammer made by the Schmidgall Mfg. Co. It is recommended for use in the machine shop, foundry, tool room, electrical department and laboratory. Hammer is guaranteed for life.

☐ **22. PAYROLL FORMS**—Bulletin describes payroll forms for withholding tax, simplified payroll forms for withholding tax, social security and other deductions, and time and pay roll books. Wilson Jones Co.

☐ **23. SAPPHIRE GAGES**—Elgin sapphire plug and ring gages and gage accessories

(Continued on page 16)

PURCHASING AGENTS—ASSISTANTS—BUYERS

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FOUR "KNOW HOW" PAGES—14-16-19-20

Use convenient prepaid postcards on pages 19 & 20



HERE's the umpteenth test or inspection Nicholson and Black Diamond files go through before they're permitted to face the world under the Nicholson guarantee of *Twelve perfect files in every dozen.*

It's the "ringing" test for soundness. The inspector taps the file on a metal block or anvil. If its ring is a clear "plink," the verdict is "okeh." If a dull "plunk," most likely there's an invisible "water crack" somewhere . . . and the file is immediately rejected.

Every Nicholson and Black Diamond file is given the "ringing" test—as well as many other tests and inspections. No important step in its manufacture is left unguarded. As a result, these famous files come to you with unsurpassed uniformity—in shape, dimensions, cut, hardness and soundness.

• No matter what the requirement, more than 3000 kinds, cuts and sizes in the Nicholson and Black Diamond lines make available *The right file for the job . . .* thus making possible top-speed filing production and maximum filing efficiency. *Order Through Your Mill-supply House.*



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NICHOLSON FILES FOR EVERY PURPOSE

"Know-How" Information, Continued

USE PREPAID POST CARD
PAGES 19 & 20

are described in bulletin issued by Sapphire Products Divn. of Elgin National Watch Co.

□ **24. EYELETS**—New eyelet catalog, 80 pages, which illustrates over 650 standard eyelets, grouped for quick reference, with data on number, OD, flange diameter, length under flange or length overall, metal thickness, and section describing modern eyelet machines, has been issued by Edwin B. Stimpson Co., Inc. If you buy eyelets for any purpose, you should have copy of this catalog in your file.

□ **25. LUBRICANT**—"I. P." Leadolene, a modern (indestructible pH-ilm) lubricant developed to meet needs of increased speeds, greater pressures, and high heat conditions, is described in bulletin issued by the Brooks Oil Co. It is said to successfully repel water, is not easily emulsified, and to retain its stability in service and in storage. Maker states it will not attack metal, and will protect against corrosion by air, water, and many kinds of fumes.

□ **26. TWIST DRILLS**—Bulletin 435 describes new line of Threadwell High Speed Drills just announced by the Threadwell Tap & Die Co. Line includes high speed taper shank drills in all standard sizes up to 1½" dia., and high speed straight shank drills in taper lengths, wire gauge sizes and jobbers lengths.

□ **27. ALLOY CASTINGS**—New catalog No. 2041 describes products and services of the National Alloy Steel Divn. of the Blaw-Knox Co. It also describes the technique of "Rotocasting"—the production of castings by centrifugal force. These are made in wide variety of sizes from 2½" OD to 28" OD, and in lengths up to 13 ft., with wall thicknesses from ¼" to 2".

□ **28. MEEHANITE METAL**—Form DM-145 describes typical application case histories including thread gages, upsetting dies and precision machinery. Numerous bulletins on Meehanite castings of varied types including the Meehanite Handbook are listed in this form. Meehanite Metal Corp.

□ **29. MAGNESIUM PARTS**—How the Manodyz process gives better protection for magnesium parts, imparting wear and corrosion resistance to magnesium alloys, and provides finishes that can be dyed to practically any other color desired, is told in bulletin and mimeograph description available from the Hanson-Van-Winkle-Munning Co. The finish is highly corrosion resistant and an excellent paint base.

□ **30. CALCIUM HYPOCHLORITE**—Folder A-700 entitled "Pittchlor—Ideal for use as a Bleach-Germicide-Disinfectant" is available from Columbia Chemical Divn., Pittsburgh Plate Glass Co. Pittchlor (70% cal-

cium hypochlorite) can be used for water sanitation, sewage treatment, petroleum sweetening, wool shrink-resistant treatment, laundry bleach, and for public health protection.

□ **31. DRYSEAL PIPE THREADS**—"What Dryseal Pipe Threads are and How They Work" is title of bulletin issued by The Weatherhead Co. Dryseal pipe threads are claimed to be better both from the standpoint of seal and strength, and are used for fuel and oil systems, as well as refrigeration systems. All Emerto, inverted, S. A. E. and compression tube fittings using a pipe thread will be supplied with Dryseal Pipe threads. AN and ER aviation fittings made to AN Standards are not changed. Purchasing Agents will find booklet of interest.

□ **32. SAW GUN**—The Saw Gun portable power saw and file for use on metals, wood, plastic and other materials is described in bulletin issued by Mid States Equipment Corp. Unit attaches to electric or air drills or flexible shaft, converting rotary action to reciprocating motion. Ordinary hack-saw blade does the cutting, or ordinary file may be inserted in holder for power-filing.

□ **33. TUBING**—Three free tubing booklets. The Ohio Seamless Tube Co. offers two technical handbooks, and a booklet of master weight tables for round steel tubing. Handbook M-1 covers seamless mechanical tubing, and contains definitions, classifications by uses, chemical analyses, and other data. A-2 covers seamless aircraft tubing. The Master Weight Tables booklet includes dimensions and weights of pipe sizes in addition to weight tables for square, rectangular, hexagonal and octagonal tubing.

□ **34. ALUMINIZED STEEL**—"Armco Aluminized Steel" is title of booklet describing sheet steel coated with aluminum. Finished product is coated both sides, combining surface characteristics of aluminum with the mechanical and physical properties of steel. Applications are illustrated.

□ **35. MATERIALS HANDLING**—"Busy Man's Index to Economical and Efficient Conveying Bulletin" tells about the Island Equipment Corporation's line of spot conveying equipment. 20 pages.

□ **36. ROTARY PUMPS**—Bulletin No. 10 describes Roper Series K rotary pumps for pressure lubricating jobs, hydraulic service, Diesel fuel oil transfer work, fuel supply duty and similar applications pumping clean liquids. Geo. D. Roper Corp.

□ **37. LIVE CENTERS**—Bulletin tells about "engineered live centers" and gives specifications of the standards which are made

with Morse taper and three types of specials. Sturdimatic Tool Co.

□ **38. HYDRAULIC POWER Unit**—Bulletin describes the Roper Hydraulic Pac, a complete "3 in 1" hydraulic power unit, which can be powered by an electric motor or by a stationary or portable type of gasoline or diesel engine. It is small and compact and especially designed for all makes and models of farm-type tractors commonly used for yard duty by industrial plants. With the application of hydraulic power for loading and lifting jobs, plants can save time and manpower with this unit. It operates at wide range of speeds and can be connected and driven in a variety of ways to suit job needs. George D. Roper Corp.

□ **39. TUBING**—Bulletin gives technical data and fabricating information on Bundy-weld steel and monel tubing, and information on properties, coatings, sizes, weights and bursting strengths. Fabricated parts are illustrated. Bundy Tubing Co.

□ **40. METAL FABRICATION Services**—Hungerford Corp. offers 16-page booklet describing its metal fabrication services, examples of stainless steel fabrication, sheet metal work, steel plate construction, welded assemblies and numerous special products.

□ **41. MANUFACTURING SERVICE**—Booklet describes the production facilities of the Diagraph-Bradley Stencil Machine Corp., illustrates some of the war work done by the company, and gives information on major shop equipment.

□ **42. MATERIALS HANDLING**—80-page catalog No. 22 on materials handling equipment is available from Lewis-Shepard Co. Mechanical and hydraulic lift trucks, specific duty lifts, skid platforms, pallets, power fork trucks (gas, electric), stackers, and floor and hand trucks are among the equipment units shown.

□ **43. CAST-TO-SHAPE Steels**—"Jessop Steels Cast-To-Shape" is title of interesting illustrated booklet. These include tool steels, ring dies, hot work steel, water hardening steel, chrome-moly steel, stainless steel, heat resisting steels, etc. Jessop Steel Co.

□ **44. PROTECTIVE COATING**—Prufcoat, protective coating for all types of surfaces, which can be painted on, sprayed or applied by dipping, is described in bulletin issued by Prufcoat Laboratories. Can be used on concrete, structural steel, floors, tanks, machinery, etc. It is said to provide positive protection against acids, alkalis, oil and water.

□ **45. ALLOY POWDERS**—Booklet describes the Hydride Process, its purpose and field of application; properties of metallic hydrides; titanium, zirconium, zirconium-copper, titanium-copper alloys, powdered alloys, etc. Master alloy powders come in form of fine powder of 100 to 300 mesh. Sintering is simple operation. Metal Hydrides, Inc.

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(Continued on page 19)

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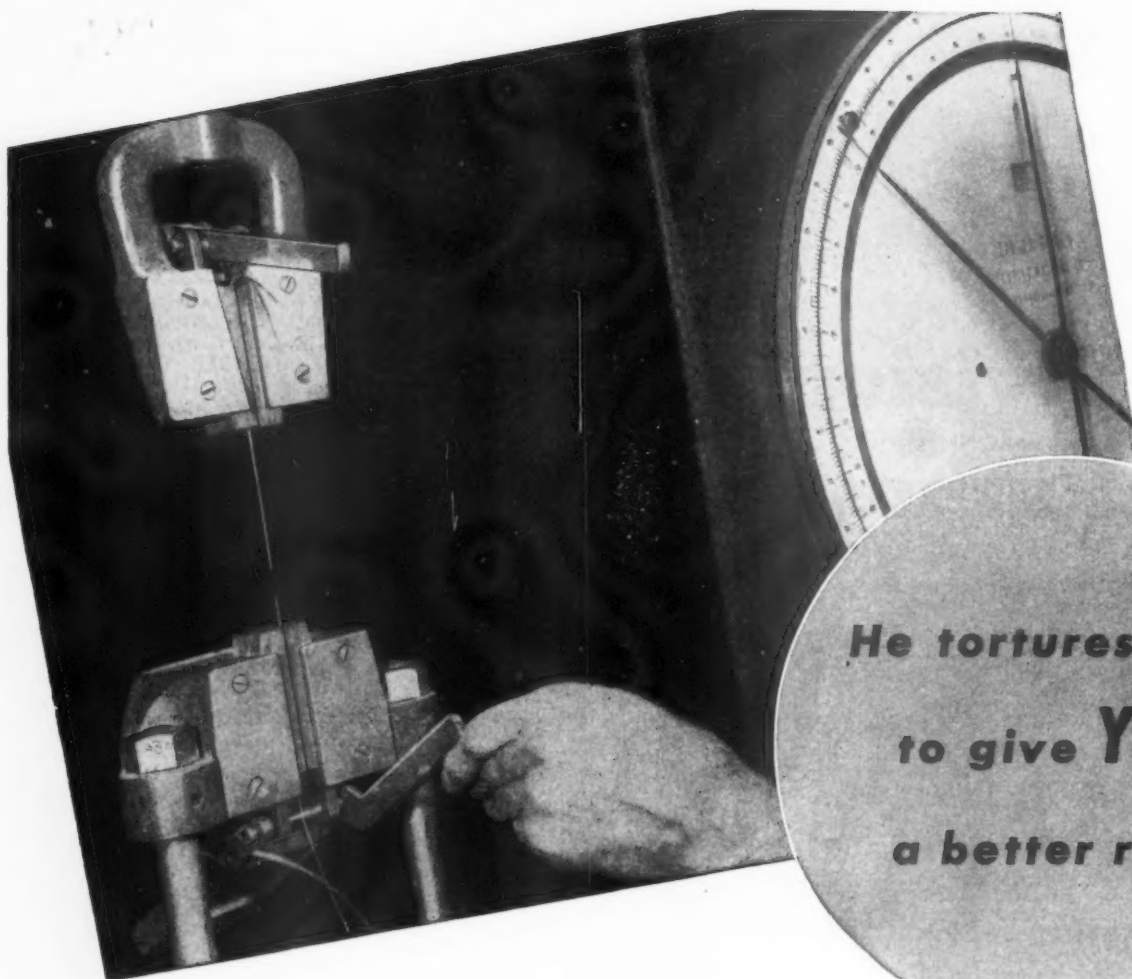
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PAGES 19 & 20

(Continued from page 16)

□ **46. MOVING MATERIALS** — "Moving Materials from here to There" is subject of 24-page book containing case histories and widely divergent problems solved by Orton Crane & Shovel Co. It is an idea book you will find of value in solving some bulk material handling problem.

□ **47. STEEL DATALATOR**—If you are buying steel you will want a copy of slide-rule type chart available from Bliss & Laughlin, Inc., which gives (1) Physical properties of cold drawn steel. (2) Physical properties of heat treated alloy steels. (3) Jominy hardenability values and distances for alloy "H" steels. (4) Hardenability characteristics (DI) of alloy steels. (5) Hardness conversion tables, and carburizing and heat treating suggestions. Its size is 5½" x 12".

□ **48. PACKAGED WATER HEATING**—Bulletin describes O'Brien all-bronze steam-mixer water heater (designed for pressures of from 50# to 150#), which is said to quietly diffuse steam directly from water to produce approximately 40% more hot water per pound of steam than conventional indirect heaters. Heater is complete with automatic temperature-pressure controls. O'Brien Steam Specialty Co.

□ **49. CONVEYOR BELT**—Broadside describes Griptop conveyor belt for moving ice, coal, freight and packaged goods up steep inclines. Ice is hauled up 10 degree grades, coal up 28 degree, and packaged freight up 30 degrees. The B. F. Goodrich Co.

□ **50. ALUNDUM TERRAZZO Aggregate**—It was developed to overcome the slipperiness of terrazzo, especially when wet. Bulletin available from Norton Co. describes and illustrates use of this ceramic abrasive for monolithic or pre-cast terrazzo. It is available in 7 colors. It is used for floors, stairs, ramps, and sidewalks.

□ **51. POWER BRUSH USES**—A 24-page booklet which is a virtual encyclopedia of power brush usage is available from Osborn Mfg. Co. It is generously illustrated, tells about the selection of brushes, and how to gain the greatest use from brushes. 30 illustrations show power brush operations. Numerous tables cover such subjects as deburring, surface finishing, and finishing to improve wearing qualities. Brush Division, Osborn Mfg. Co.

□ **52. SAFETY SUPPLIES**—New Dunn catalog lists line of head to foot protection for industrial workers. Dunn Products.

□ **53. PROCESSING EQUIPMENT**—Equipment for scientific homogenization is described in catalog describing the Flowmaster line of processing equipment, which is adapted for wide range of applications in various processing industries, and includes homogenizers, Kom-bi-nators, pumps, etc. Marco Co., Inc.

□ **54. MATERIALS HANDLING** — Hopper-bottom railroad cars are shaken-out "broom-clean" in 1½ to 7 minutes by two men, it is claimed, with Robins Car Shakeout which is described in new bulletin just issued by Robins Conveyors, Inc.

□ **55. POWER PLANT MAINTENANCE**—How better to perform power plant maintenance and cleaning operations at lower cost is described in new revised Digest on Modern Power Plant Procedures which covers 71 different maintenance tasks. Copy is free. Oakite Products, Inc.

□ **56. ORDERING TAP ETC.**—Guide for ordering Greenfield Taps, Drills, Dies, Reamers, Screw Plates, Screw Extractors, Pipe Threading Sets and gages has been issued by Greenfield Tap & Die Corp. It lists standard terminology and abbreviations used, gives catalog page number, catalog number, sizes and quantities, and lists information required on orders for special tools.

□ **57. CARBIDE TOOLS** — Condensed 6-page catalog presents complete description of Metro standard carbide tools and masonry drills. You should have copy in your cutting tool file. Metro Tool & Gage Co.

□ **58. TRAINING FILMS** — Catalog describes what is believed to be the largest single collection of educational and teaching films now available to schools and industries. It contains complete list of all U. S. Government 16 mm sound films and 35mm filmstrips, totaling 1,158. Castle Films, Inc.

□ **59. MIXING-Grinding** — Worm gear speed reducer applications to various types of mixing and grinding equipment are described in bulletin issued by Cleveland Worm & Gear Co. Specific "mixing and

grinding" operations include crushing, screening, agitating and polishing. Drive details are shown.

□ **60. MAPS**—Broadside illustrates "Maps of Everywhere" for all purposes, and gives complete information on various types of "complete" and sectional maps available from American Map Co.

□ **61. DDT BOOKLET**—Four page booklet on Penco DDT products is available from the Pennsylvania Salt Mfg. Co. Five products are listed. DB-50 for insecticide manufacturers; WB-50 for mixture with water as a spray; solvent concentrate; cattle spray, and DDT Technical for insecticide manufacturers.

□ **62. SOFT HAMMERS**—Six-page catalog covers "Perfect Balance" line of Soft hammers. Fourteen models and 56 numbers are shown, which provide soft hammers for light taps and controlled blows for various purposes from "medical therapy to ship-building." Gregory Tool & Mfg. Co.

□ **63. BUSINESS STATIONERY** — Folder containing samples of 100% cotton fiber letterheads with "individual" watermarks, is available from the Fox River Paper Corporation.

□ **64. CORROSION RESISTANT Valves**—Two bulletins published by Alloy Steel Products Co., Inc., describe Alloyco stainless steel corrosion resistant valves, and (No. 2) properties and applications of Alloyco-20, a high chrome-nickel alloy reinforced with copper and molybdenum.

□ **65. FREE SAFETY BULLETINS**—Peninsular Grinding Wheel Co. has new series of 12 safety posters drawn by J. R. Williams creator of "The Bull of the Woods". Posters are in two colors, and measure 17 x 22. They are designed to promote safety in grinding wheel operations. And, are available without cost.

□ **66. SILICONE RUBBER** — Dow-Corning has special bulletin on Silastic, the new Silicone rubber which is resilient at temperatures up to 500 deg F., and at temperatures down to -70 deg. F. Six stocks for molding and extruding, coating and laminating are available. Get acquainted with Silastic.

□ **67. SAFETY RELIEF VALVE** — Publication 4150 describes "The Cochrane

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5/48

(Continued from page 19)

Multiport Relief Valve". It has numerous applications in relief of steam, air, gas, gasoline and oil vapors, water, etc. Adaptability to other services is discussed. "Sizing Data on Relief Valves" includes capacity and pressure rise tables for use in size selection. The Cochrane Corporation.

□ 68. **CERIUM**—Bulletin describes cerium, and its value in improving forgeability of magnesium, imparting increased tensile strength at elevated temperatures, and its use with aluminum in the making of sounder castings and forgings. Cerium Metals Corp.

□ 69. **AIR-DRAULIC CYLINDERS**—Logan air powered and oil regulated cylinders are described in catalog 471. Manufacturer states they provide smooth, uniform, hydraulic-type feed control in self contained oil circuit which does not require use of a hydraulic power unit. Book explains utilization in wide range of machine tool, manufacturing and processing applications. Logansport Machine Co.

□ 70. **MATERIALS HANDLING**—The Turner system employing transport, jimmy, bin sections, stacking boxes, shop box racks, crane trays and stacking units, pallets and platforms, is described in bulletin issued by Factory Service Company. System is said to save time and labor and space costs. You should have copy of this book.

□ 71. **POWER PUMPS**—Bulletin W-414-B50 describes Worthington automatic Varflo triplex power pumps—constant speed with 0-100% capacity. Services include boiler feed, product pipe line pumping, hydraulic extrusion presses, desuperheater feed service, process charging in chemical plants and refineries, waterflooding in oil fields. Worthington Pump & Machinery Corp.

□ 72. **HEAT INSULATION**—Revised edition of heat insulation materials catalog, "Heat Insulation for Industry". It covers magnesite, asbestos, sponge, mineral wool, diatomaceous earth, calcined aggregate, and insulating, bonding, and refractory cements. The Philip Carey Mfg. Co.

□ 73. **RELAYS**—Bulletin 130 describes heavy duty relays. Relays will operate as many as eight electrically independent circuits or transfer up to four load circuits from one source of supply to another. Obtainable with mechanical interlock for reversing service and with mechanical latch

for manual or electrical reset. Ward Leonard Electric Co.

□ 74. **TRUCKS-DOLLIES**—Circular illustrates floor, hand and platform trucks, and shelf trucks made by Re-Bo Manufacturing Co., Inc.

□ 75. **VISIBLE RECORD CARDS**—Samples of Handifax visible record cards which can be assembled into sheets are yours for the asking. Ross-Gould Co.

□ 76. **MOTOR SERVICE**—Three service plants that provide 100 per cent service coverage for all fractional horsepower motors are explained in new booklet B-3711 issued by Westinghouse Electric Corp. Booklet tells who is entitled to use them, how they operate, and what can be accomplished when they are properly used. Motor exchange plan and repair plan are described.

□ 77. **AIR HOIST**—Bulletin describes new, lightweight portable air hoist designed for a multitude of lifting jobs in the ¼ and ½ ton capacity range developed by Keller Tool Co. Hoist weighs only 30 pounds, but has lifting capacity of 1000 lbs. at 17 ft. per minute.

□ 78. **SILICONES as Lubricants**—Properties of silicone fluids for lubrication applications are compared with petroleum oils, and characteristics of the grease discussed in article "Silicones as Lubricants" available from Dow Corning Corp. This is new development you will find of much interest.

□ 79. **PORTABLE GRINDER WHEELS**—Bulletin describes new vibration dampener bushing or resilient mounting which features Manhattan wheels for portable grinders. Better finish and increased production are listed among the advantages. Manhattan Rubber Division.

□ 80. **CHAIN LINK FENCE**—Handbook published by Wickwire Spencer Steel tells "How to Erect Chain Link Fence". Each step is described in logical sequence, the text being supplemented by tables, charts, diagrams and detailed drawings.

□ 81. **HEAT EXCHANGER**—New bulletin 1614 from the Griscom-Russell Co. describes Twin G-Fin section which has been characterized as a universal heat exchanger because of its many applications in cooling, heating, condensing and heat exchange services. It lists 21 features and corresponding advantages of this finned tube unit.

□ 82. **PREPARED ATMOSPHERES**—New information on the preparation and application of various types of atmospheres used in the heat processing of metals is included in 12-page bulletin SC-129 issued by Surface Combustion Corp.

□ 83. **INFRA RED**—Bulletin entitled "Infrared Parade" deals with the infrared heat process, illustrates its use in various types of war work, and shows installations in numerous industries for baking, drying, preheating. The Fosterlra Pressed Steel Corp.

□ 84. **CONE-DRIVE GEAR SETS**—New 16-page catalog, No. 700, describes standardized Cone-Drive gear sets. The 99 sizes and ratios of standardized gear sets listed are carried in stock in matched sets. Michigan Tool Co.

□ 85. **ALUMINUM ALLOY**—Bulletin 50-B describes Reynold's Aluminum Alloy R-301, high strength aluminum alloy sheet and plate. R-301 is described as a strong, corrosion resistant, and readily workable aluminum alloy. It is a composite alloy, consisting of a high strength aluminum alloy core, clad on each face with a corrosion resistant aluminum alloy of intermediate strength. Reynolds Metals Co. Aluminum Division.

□ 86. **EDUCATIONAL FILMS**—"Lessons in Grinding" is the title of booklet available from the Norton Co., which describes a series of 16 mm Kodachrome Motion pictures with sound for apprentice and student education. The seven films are available without cost.

□ 87. **ROOFING-SIDING**—Illustrated circular describing Plasticlad, an alloy-steel electrostatically coated roofing and siding material is available from the Reliance Steel Products Co. Toughness of the copolymer resin coat, immunity to atmospheric corrosion or chemical attack and high fire resistance are listed as among merits of the material.

□ 88. **SANITATION And Liquid Clarification**—Complete line of Rex sanitation and liquid equipment is presented in new 44-page book (No. 46-3) issued by Chain Belt Co. Products described include conveyor sludge collectors, sludge removers, grit collectors, washers, thickeners, skimmers, mixers, etc. Milwaukee, Wis.

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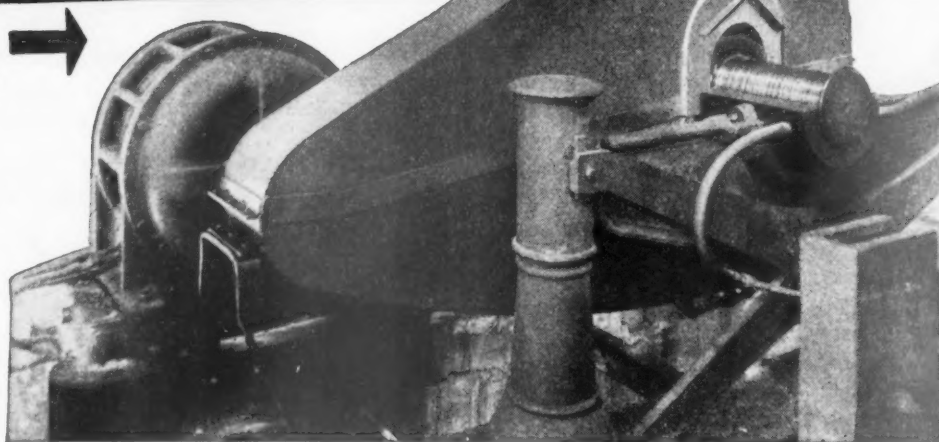
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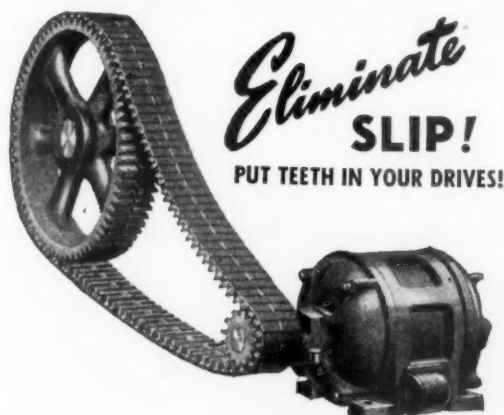
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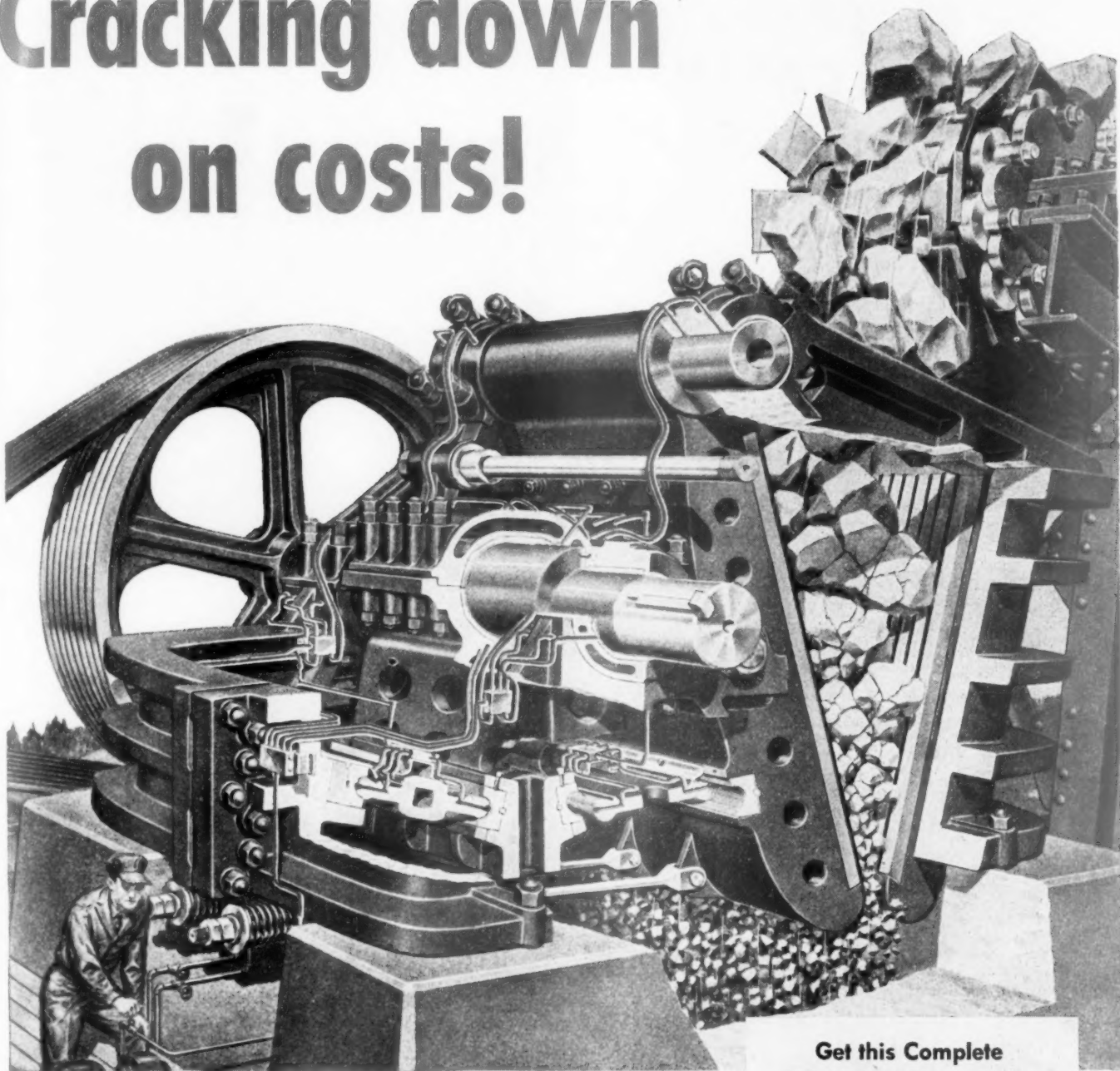
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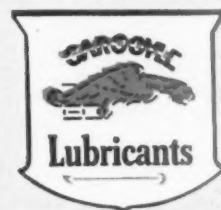
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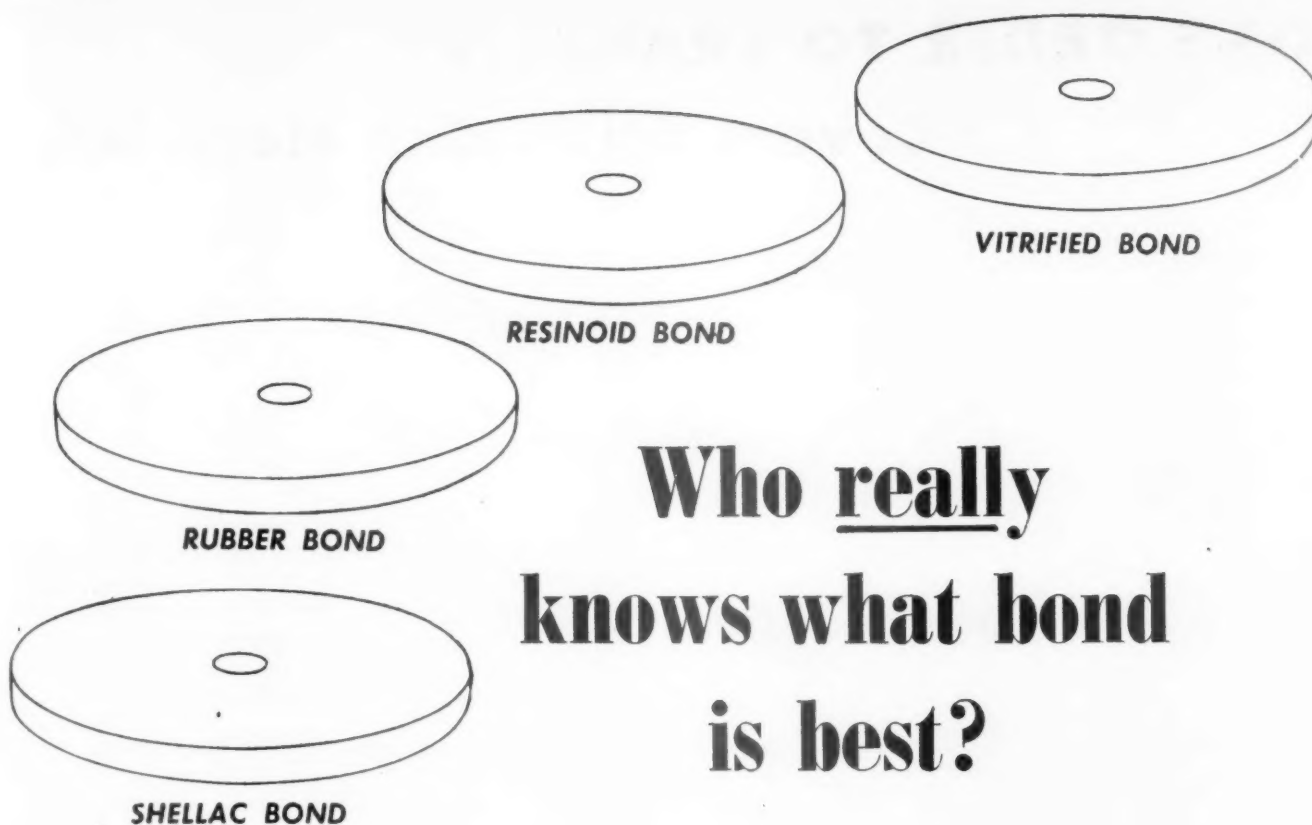
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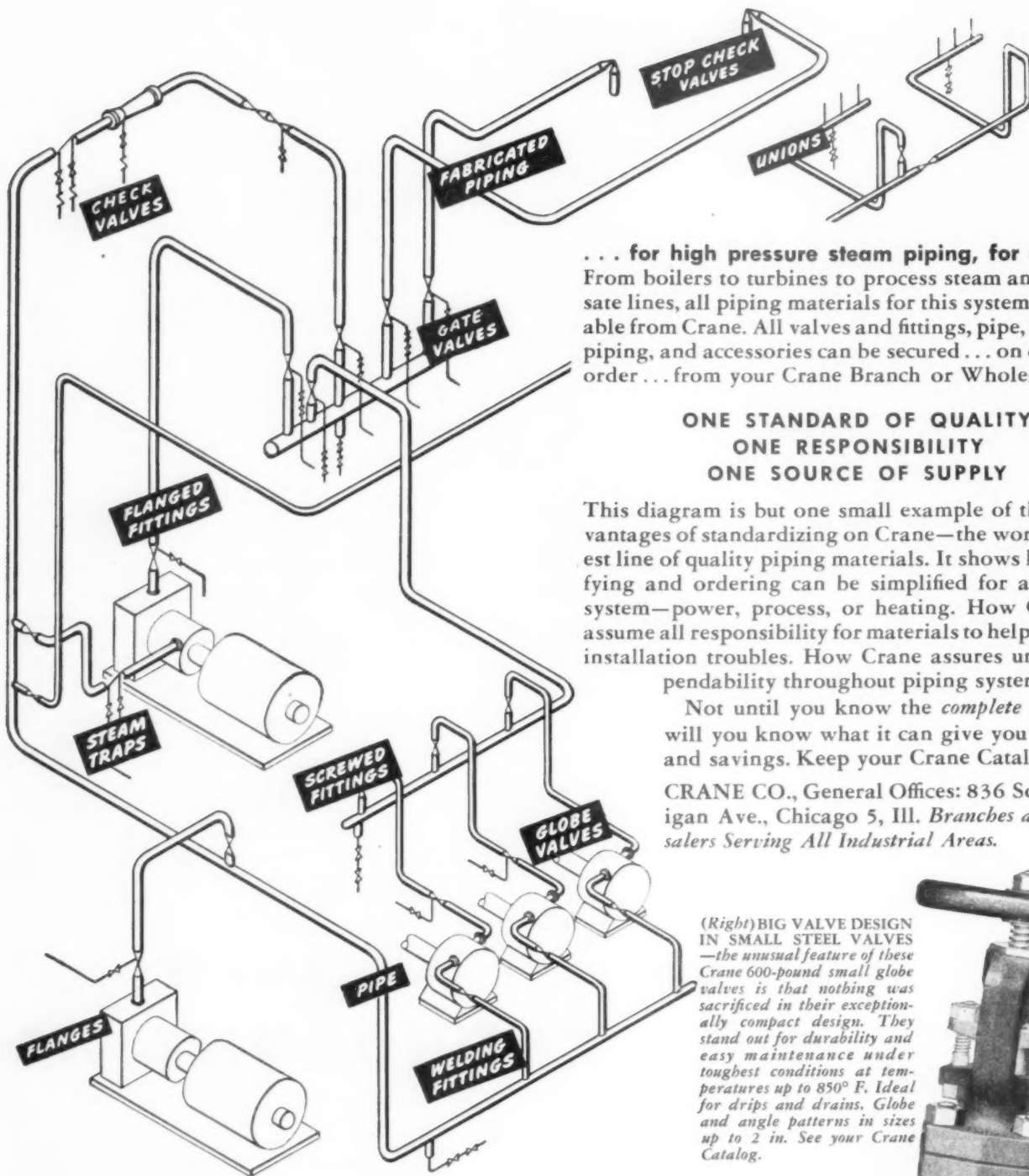
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"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

ONE ORDER TO CRANE...

Covers All Piping Materials



... for high pressure steam piping, for example. From boilers to turbines to process steam and condensate lines, all piping materials for this system are available from Crane. All valves and fittings, pipe, fabricated piping, and accessories can be secured ... on one single order ... from your Crane Branch or Wholesaler.

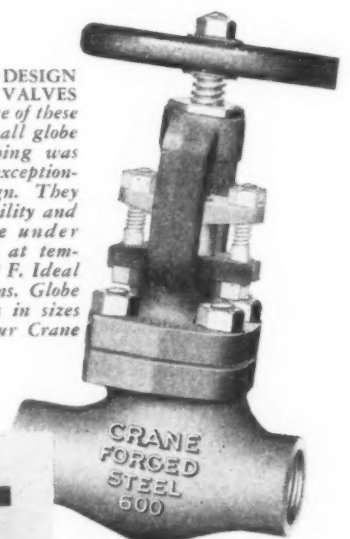
ONE STANDARD OF QUALITY ONE RESPONSIBILITY ONE SOURCE OF SUPPLY

This diagram is but one small example of the big advantages of standardizing on Crane—the world's greatest line of quality piping materials. It shows how specifying and ordering can be simplified for any piping system—power, process, or heating. How Crane can assume all responsibility for materials to help you avoid installation troubles. How Crane assures uniform dependability throughout piping systems.

Not until you know the *complete Crane line* will you know what it can give you in service and savings. Keep your Crane Catalog handy.

CRANE CO., General Offices: 836 South Michigan Ave., Chicago 5, Ill. Branches and Wholesalers Serving All Industrial Areas.

(Right) BIG VALVE DESIGN IN SMALL STEEL VALVES—the unusual feature of these Crane 600-pound small globe valves is that nothing was sacrificed in their exceptionally compact design. They stand out for durability and easy maintenance under toughest conditions at temperatures up to 850° F. Ideal for drips and drains. Globe and angle patterns in sizes up to 2 in. See your Crane Catalog.



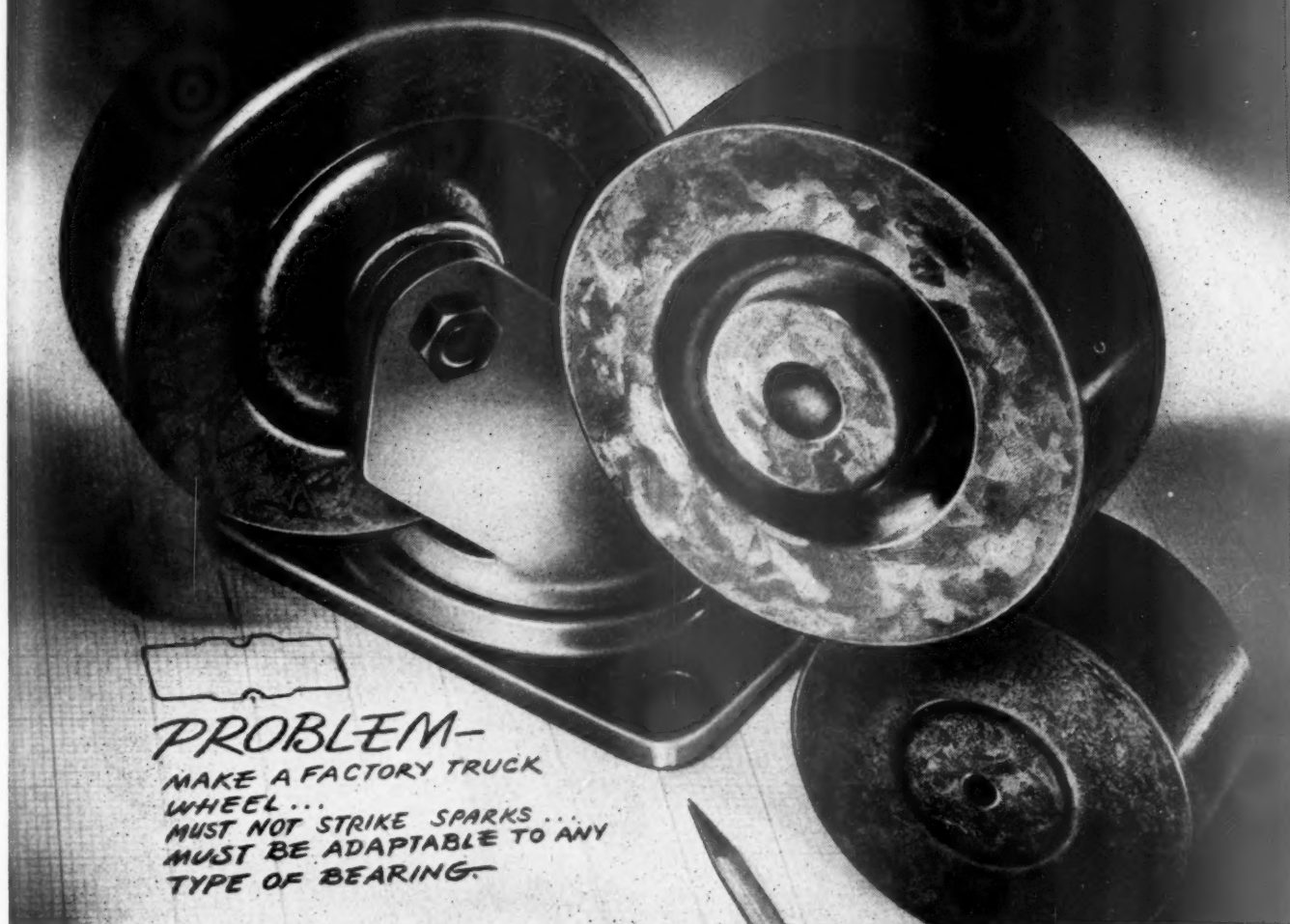
EVERYTHING FROM ...

VALVES • FITTINGS
PIPE • PLUMBING
HEATING • PUMPS

CRANE

FOR EVERY PIPING SYSTEM

DESIGNED AND ENGINEERED AT NO. 1 PLASTICS AVENUE



PLASTICS . . . FOR SMOOTHER ROLLING TRUCK WHEELS

More and more factory trucks are rolling on plastic wheels. Designed at No. 1 Plastics Avenue, these are made by General Electric for the Service Caster & Truck Company.

No wonder they are so widely used in industry. Compression-molded laminates of chopped duck cloth and phenolic, these truck wheels are rugged . . . economical . . . impervious to moisture and chemical action. They outwear metal wheels, reduce wear and tear on factory floors, and do not strike sparks.

Not all plastics are glamorous. The factory truck wheel is typical of hundreds of workaday plastics products that have been produced by G.E.'s complete plastics service to do a better job, or a job that only plastics can do.

Check on the progress in the development of heavy-duty industrial plastics. Bring any kind of plastics problem to General Electric—the world's largest manufacturer of plastics parts. Write

to Plastics Divisions, General Electric Co., 1 Plastics Avenue, Pittsfield, Mass. *We shall be glad to send you upon request a copy of the new illustrated booklet, "What Are Plastics?"*

G-E Complete Service — Everything in Plastics

Backed by 52 years of experience. We've been designing and manufacturing plastics products ever since 1894. G-E Research works continually to develop new materials, new processes, new applications.

No. 1 Plastics Avenue—complete plastics service—engineering, design and mold-making. Our own industrial designers and engineers, working together, create plastics parts that are both scientifically sound and good-looking. Our own toolrooms are manned by skilled craftsmen—average precision mold experience, 12 years.

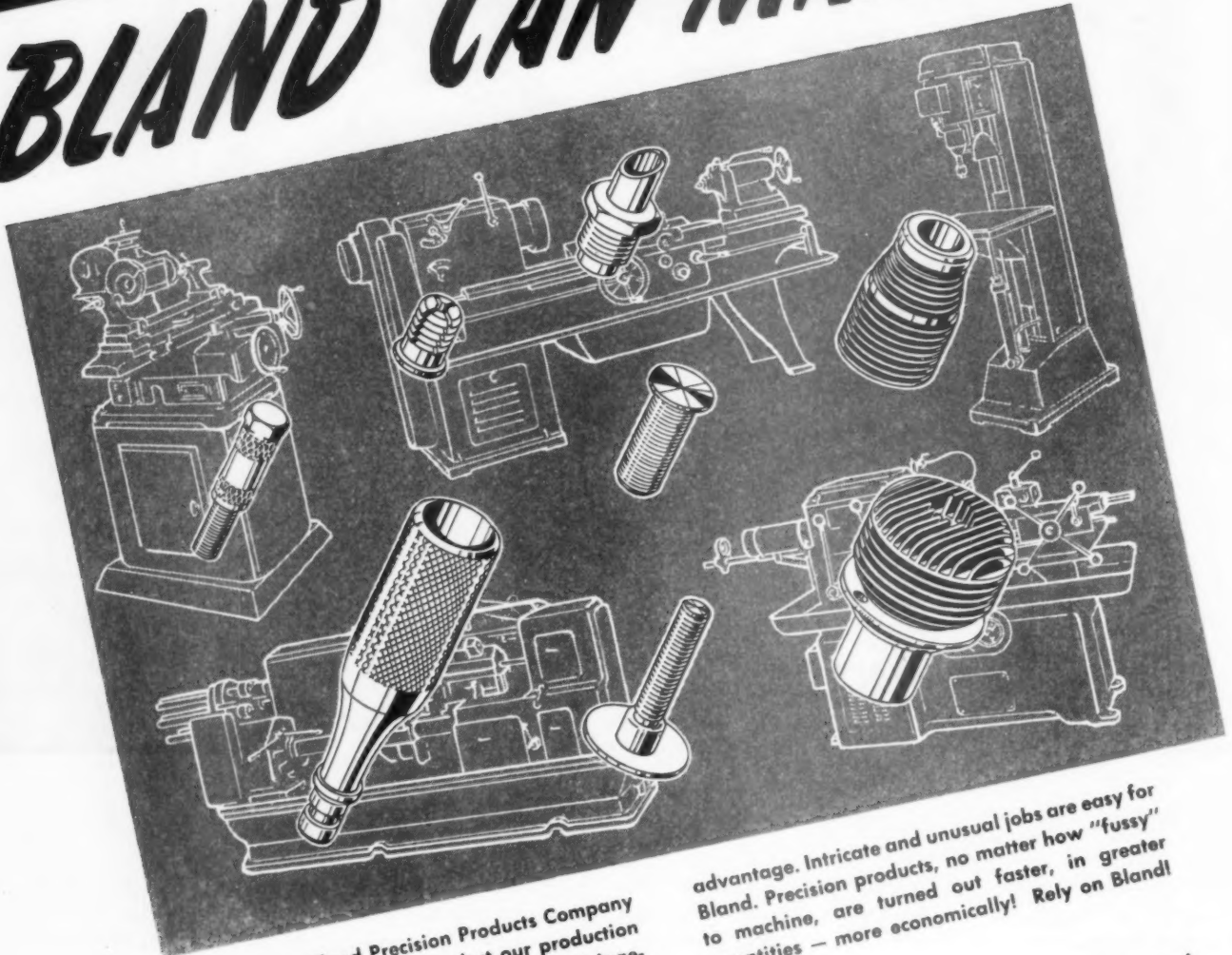
All types of plastics. Facilities for compression, injection, transfer and cold molding . . . for both high and low pressure laminating . . . for fabricating. And G-E Quality Control—a byword in industry—means as many as 160 inspections and analyses for a single plastic part.



GENERAL ELECTRIC

General Electric plastics factories are located in Fort Wayne, Ind., Meriden, Conn., Scranton, Pa., Taunton, West Lynn, and Pittsfield, Mass.

No Matter how Unusual the Precision Job —
BLAND CAN MAKE IT!



Not only does Bland Precision Products Company have the finest in equipment, but our production men have the experience and mechanical ingenuity to utilize this equipment to the best possible

advantage. Intricate and unusual jobs are easy for Bland. Precision products, no matter how "fussy" to machine, are turned out faster, in greater quantities — more economically! Rely on Bland!

Write or Wire Your Inquiries Today

- Roll Threading
- Automatic Screw Machine Operations to One Inch Diameter
- Hardening and Heat Treating
- Centerless Grinding
- Cut Threading
- Buffing and Plating
- Wide Variety of Secondary Operations such as Drilling, Tapping, Riveting, Milling and Knurling.

Specialists in
 Rolled and Cut Threaded
 Production Parts



BLAND
Precision Products Company
 HARTFORD, CONNECTICUT

BRANCH OFFICE: 861 PENOBSCOT BLDG., DETROIT, MICH.



Above: Centrifugally cast monel metal plating roll being finish-machined at Shenango-Penn.

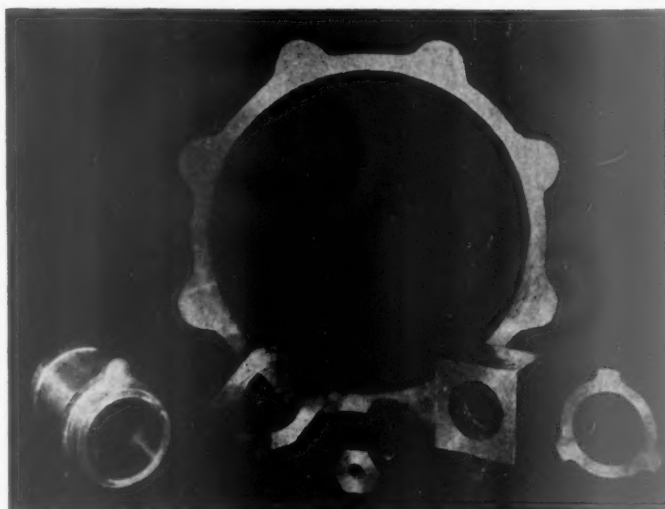
Below: These shapes, all centrifugally cast, show that Shenango-Penn process is not limited to shapes of simple circular section.

VIRTUALLY any engine, machine, or unit of equipment requiring symmetrical parts can be improved by using Shenango-Penn centrifugal castings instead of ordinary castings. This is true because, metal for metal, parts produced the Shenango-Penn way are measurably superior in tensile strength, density, hardness, and uniformity. They have finer grain structure, are better able to withstand friction, abrasion, corrosion, and all kinds of stresses.

These are not mere "laboratory" differences of meager value. They are distinct advantages that time and again have resulted in stronger, more durable, better performing products for Shenango-Penn customers.

Applying Shenango-Penn centrifugally cast parts is also a good way to reduce costs. The castings require less machining, saving time and metal. There are no sand inclusions; no blow holes to contend with. Superior, more uniform grain structure makes it easier, less expensive to attain the desired finish!

Shenango-Penn has complete, modern facilities to carry your machining requirements as far as you wish, can supply either rough castings, semi-finished or completely machined precision parts to your specification.



FREE BULLETIN No. 143

Ask for this free bulletin. It gives full information on the complete range of available ferrous and non-ferrous alloys, physical and chemical properties, recommended uses, and other data helpful in making a good engine or machine still better.

SHENANGO-PENN MOLD COMPANY

2462 WEST THIRD STREET • DOVER, OHIO
EXECUTIVE OFFICES: PITTSBURGH, PA.



**ALL BRONZES • MONEL
METAL • ALLOY IRONS**

NEW... *and Ready for Immediate*

PNEUMATIC

IMPACT WRENCH

by *Thor*

MORE POWER — *for Faster, Positive Driving and Removing of Nuts, Bolts and Cap Screws.*

LONGER LIFE — *through amazingly simple, sturdy, new impact mechanism.*

EASILY THE MOST POWERFUL tool of its class, the new THOR Reversible Impact Wrench quickly and surely *drives and removes* nuts, bolts and cap screws up to 3/4" I.D. Far lighter and more compact—only 3 3/4 pounds

in weight; 6 inches long—it is easy to handle even in hard-to-reach places. Pneumatic powered, it is extremely simple in construction for long life and fool-proof operation.

A revolutionary, new impact mechanism—exclusive with Thor—delivers direct blows that *automatically* assure maximum striking power. Because this mechanism is so simple . . . eliminating springs, gears, threads and screws . . . the tool *stays on the job longer without losing its original impact force!* Simplified design also lessens stress, permits use of sturdier parts and provides smoother operation—to reduce wear and substantially increase tool life.

Ready now for immediate delivery, the *new* Thor 3/8-inch capacity Impact Wrench will save you time and money on any heavy-duty job of driving and removing nuts, bolts and cap screws. Prove its superiority on your own work—your nearest Thor branch or representative will be glad to arrange an early demonstration.

INDEPENDENT PNEUMATIC TOOL COMPANY

600 West Jackson Boulevard, Chicago 6, Illinois

Birmingham	Boston	Buffalo	Cleveland	Detroit	Los Angeles	Milwaukee	New York	Philadelphia
	Pittsburgh	St. Louis	Salt Lake City		San Francisco	Toronto, Canada	London, England	

Delivery!

ACTUAL SIZE



GRIP THROTTLE
Model No. 6

SMALLEST, LIGHTEST TOOL OF ITS CLASS!

HERE'S FULL POWER ... LONGER!

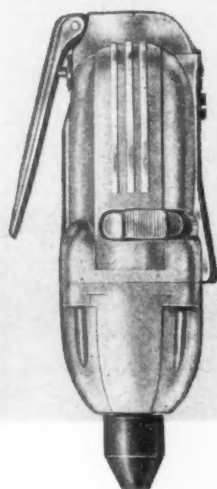
- New THOR high-power impact mechanism provides direct, *positive drive* to the impact spindle.
- *Stress is lessened* on the working parts by placing the two impact jaws at a *wider radius* to the spindle center.
- Because a new face for each jaw is *rotatively* delivered to the anvil for each blow, the impact jaws *naturally* wear longer—and wear *evenly* to retain full striking power.
- Short, rigid, spindle shank delivers blow, *close to the work* — provides *powerful, positive impact*.

HERE'S HANDLING EASE!

- The lightest tool in its class —only 3¾ pounds.
- The *smallest* tool in its class —only 5⅞ inches long.
- Torque reaction to the operator is *practically eliminated* with smooth-hitting impact mechanism.
- Motor reverses quickly, simply by pressing convenient side button *without changing grip* on handle.

AUTOMATIC LUBRICATION!

- Oil reservoir in handle automatically feeds proper amount of lubricant to motor with compressed air.



LEVER THROTTLE Model No. 6L

For vertical suspension work, furnished in place of grip throttle, if specified, at no extra charge.

Coming Soon!

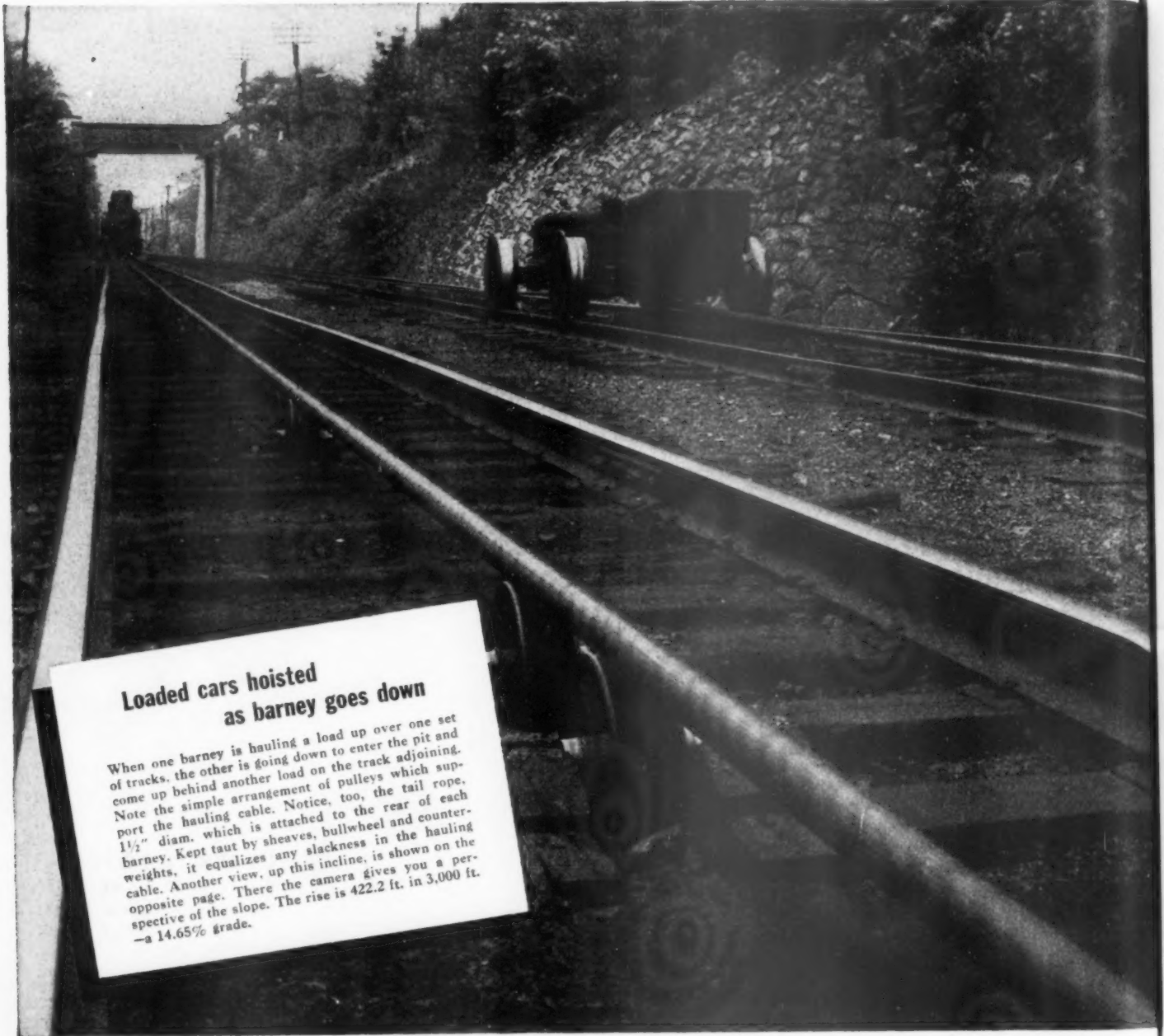
MORE NEW THOR IMPACT WRENCHES—in ¼", ⅜", ½" and 1¼" CAPACITIES. *Watch for Them!*

Thor

PORTABLE POWER

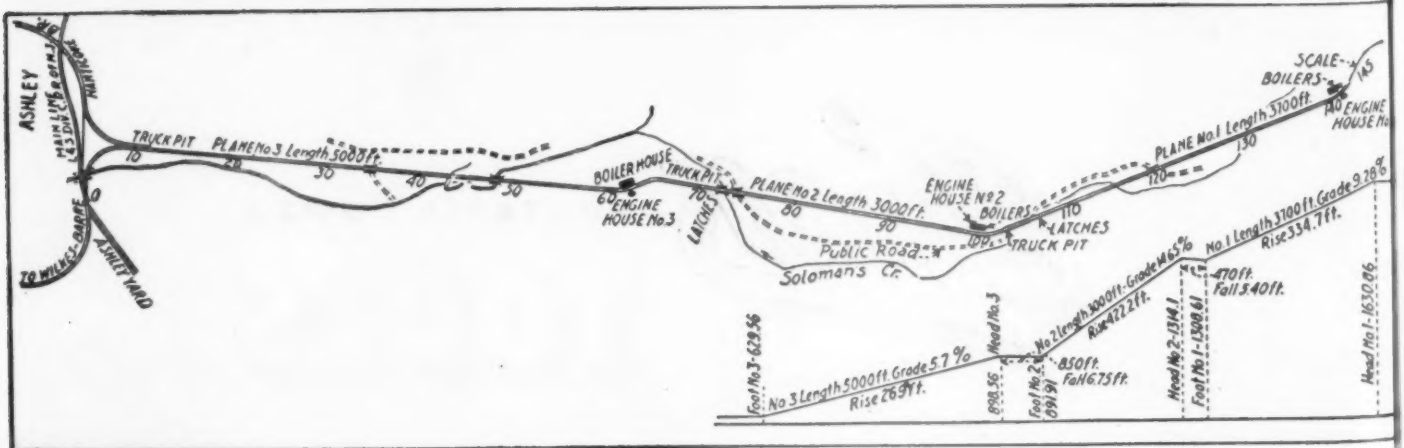
TOOLS

Hauling 27,972,495 tons of freight



Loaded cars hoisted as barney goes down

When one barney is hauling a load up over one set of tracks, the other is going down to enter the pit and come up behind another load on the track adjoining. Note the simple arrangement of pulleys which support the hauling cable. Notice, too, the tail rope, $1\frac{1}{2}$ " diam. which is attached to the rear of each barney. Kept taut by sheaves, bullwheel and counterweights, it equalizes any slackness in the hauling cable. Another view, up this incline, is shown on the opposite page. There the camera gives you a perspective of the slope. The rise is 422.2 ft. in 3,000 ft. —a 14.65% grade.



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(with
each



over the famous Ashley Planes

AMERICAN EXCELLAY PREFORMED TIGER BRAND Wire Rope sets records for top performance over 100 year period

WILKES-BARRE in the heart of the Anthracite field is three miles from Ashley, Pa., where the Ashley Planes are located. From Ashley to the mountain top it is 1,000 feet up. The grade of the famous Ashley Planes is such that a locomotive cannot negotiate it economically. The alternate route around the mountain is 12.41 winding miles of heavy grade over which a locomotive can haul a small tonnage train at slow speed. With brilliant foresight the engineers who planned the Ashley Planes 100 years ago, chose to do it the hard way. They proposed to haul freight cars up Solomon's Gap, on three inclined planes—by wire rope.

As revolutionary as this project must have been in 1843, the remarkable fact is that repeated tests prove it to be more economical than the longer route, even today. Under twenty-four hour operation, hauling an average of one million tons of coal, oil and mixed freight per month—this cable-hauled railroad equipped with about 100 tons of wire rope reduces transportation costs very materially.

Best visualized by the profile reproduced at left, the Ashley Planes, now operated by the Central Railroad of New Jersey, consist of three inclines of 5.7%, 14.65%, and 9.28% grade respectively. The total rise is 1,035.9 ft. up which 35 to 45 cars are hauled hourly at from 12 to 30 mph.

Each plane is a self-contained unit. It consists of a double track (with a truck pit at the foot of each track), and is equipped with

its own hauling cable and two cable trucks or "barneys". A power house with hoisting engine at the head of each plane furnishes the motive power.

The hauling cable (2½" diameter on the top and bottom planes, 2¾" diameter on the middle plane with the heaviest grade) passes from one barney up the plane over supporting pulleys, then around 24-ft. diameter twin traction drums, then out through the bottom of the power house and back to the barney on the parallel track.

Close check is kept on the life of these hauling cables, and is measured in terms of tonnage hauled. We believe it significant that during the years when the planes were under full wartime capacity operation, and the equipment was being worked to the limit, American TIGER BRAND Excellay Preformed Wire Rope ran up the highest tonnage performance ever recorded! 19,804,642 tons on the No. 2 plane; and 27,972,495 tons on the No. 3 plane.

TIGER BRAND Excellay Preformed Wire Rope installed on the No. 3 plane in November 1943 has to date hauled 27,972,495 tons and is still in excellent condition. The performance of these ropes continues to break previous records.

These figures—substantially better than the former best with other wire rope used—speak for themselves as proof of the superior stamina, greater ruggedness and better service TIGER BRAND delivers, wherever used.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY

San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

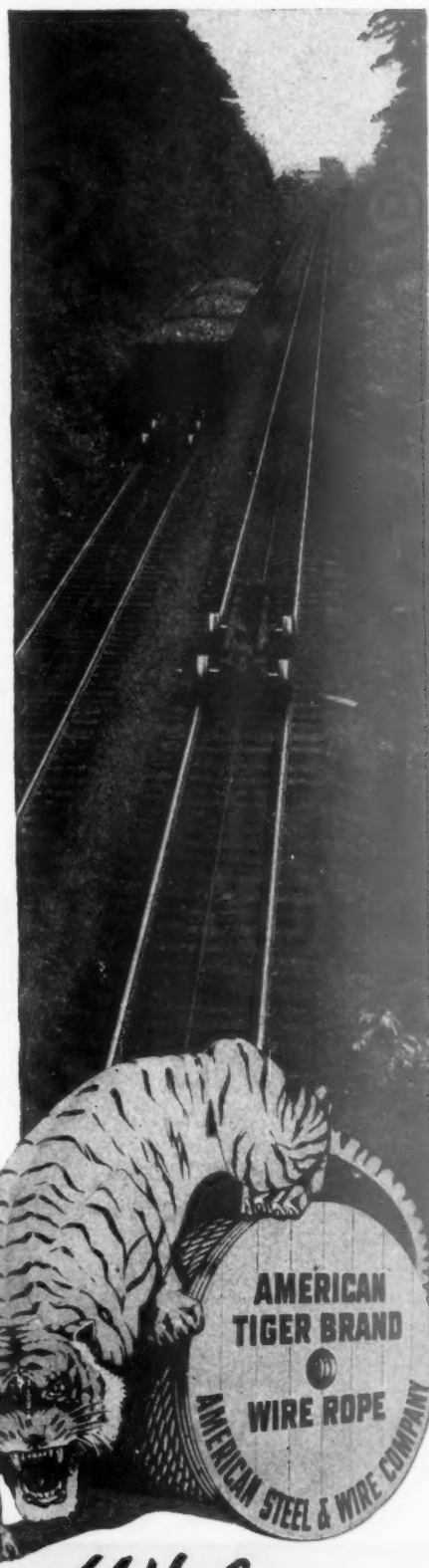


Excellay Preformed

U.S.S. AMERICAN

TIGER BRAND

Wire Rope





**THE
RIGHT GLOVE
FOR EVERY JOB**

These strong, protective work gloves are the product of one of America's largest textile mills. They are Riegel-controlled... in one plant... from raw cotton to finished glove.

Riegel Work Gloves

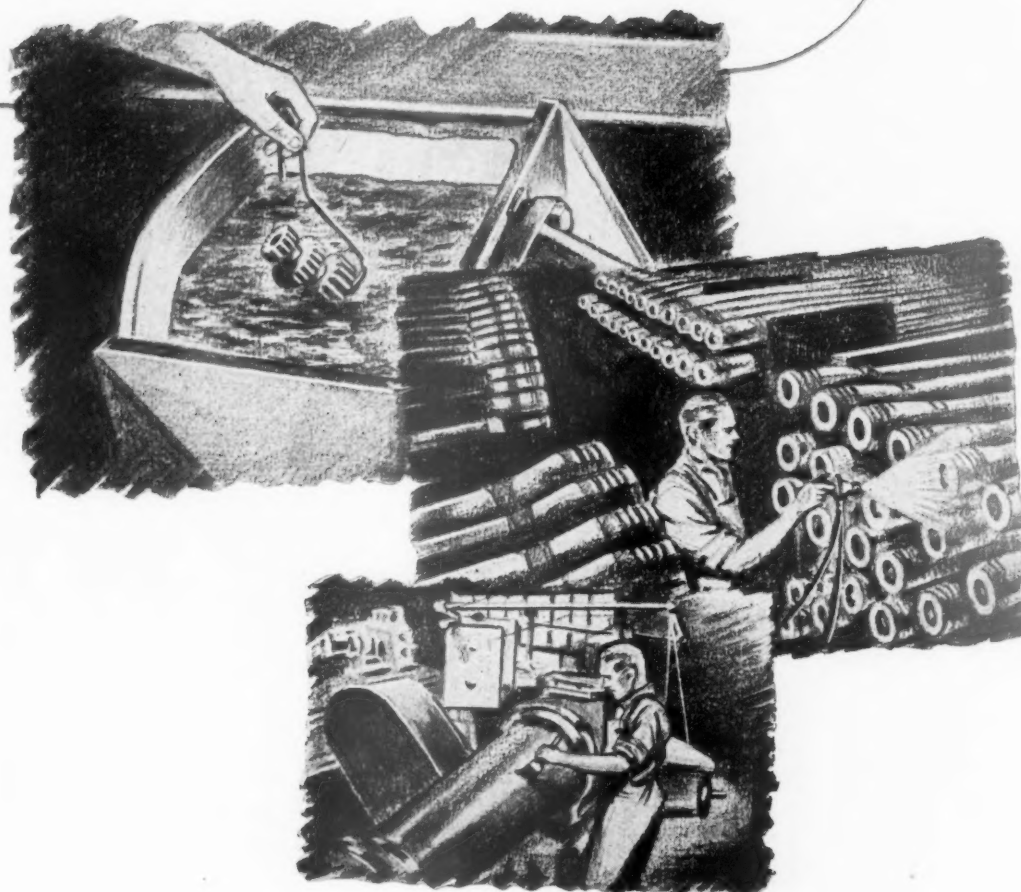
This single close supervision of every detail results in an unbeatable combination of quality, durability and economy. Riegel's constant adherence to these quality standards is of inestimable value to our customers... and to their customers in American Industry.



**RIEGEL
TEXTILE
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NEW YORK 17, N. Y.

*Rust Protection
for all metal surfaces
WITH TYCOL NO-RUST-OLS*



Easily applied—swab, dip or spray
Prevents salt-spray corrosion
Readily removed
Approved for use on government material

Yes . . . the new Tycol No-Rust-Ols are powerful rust preventives, engineered for easy application on *all* metal surfaces. These performance-proved protective products eliminate surface rust formations on stock in storage . . . parts in production . . . and machinery awaiting use.

Your nearest Tide Water Associated office will give you the complete facts about the "rust protection" afforded by new Tycol No-Rust-Ols. Call them today.

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Boston • Charlotte, N. C.
Pittsburgh • Philadelphia



17 BATTERY PLACE - NEW YORK 4, N. Y.

For Answers

on Stainless Welding

-ask EASTERN!



Atomic Hydrogen? Does atomic hydrogen welding of E-S 18-12 Mo (Type 316) produce welds as corrosion resistant as those made by a metallic arc?

Gas-Welding 18-8? What other compositions of chrome-nickel Stainless, besides E-S 18-8 (Type 302) can be oxyacetylene welded?

Tank Annealing? Is it necessary to anneal and pickle small outdoor storage tanks of E-S 18-8 LC (Type 304) after metallic-arc welding?

Weld Vibration? Do spot welds in light gages of E-S 18-8 sheet (Type 302) stand up under rapid vibration over long periods of time?

Bonding to Steel? What is the best way to join E-S 18-8 Stainless sheet (Type 302) to low-alloy steel hangers without a noticeable joint?

Eastern welcomes your questions about joining stainless steels. Whether they concern arc or gas welding, atomic hydrogen, or heliarc welding of light-gage sheet . . . Eastern Stainless' technical men have answers based on experience. "Eastern Stainless Steel Sheets", a modern book about a modern metal, gives you much data on joining. Send for your copy, and if you need further help, get in touch with any of our 18 offices or distributors.

JMLco E-D1



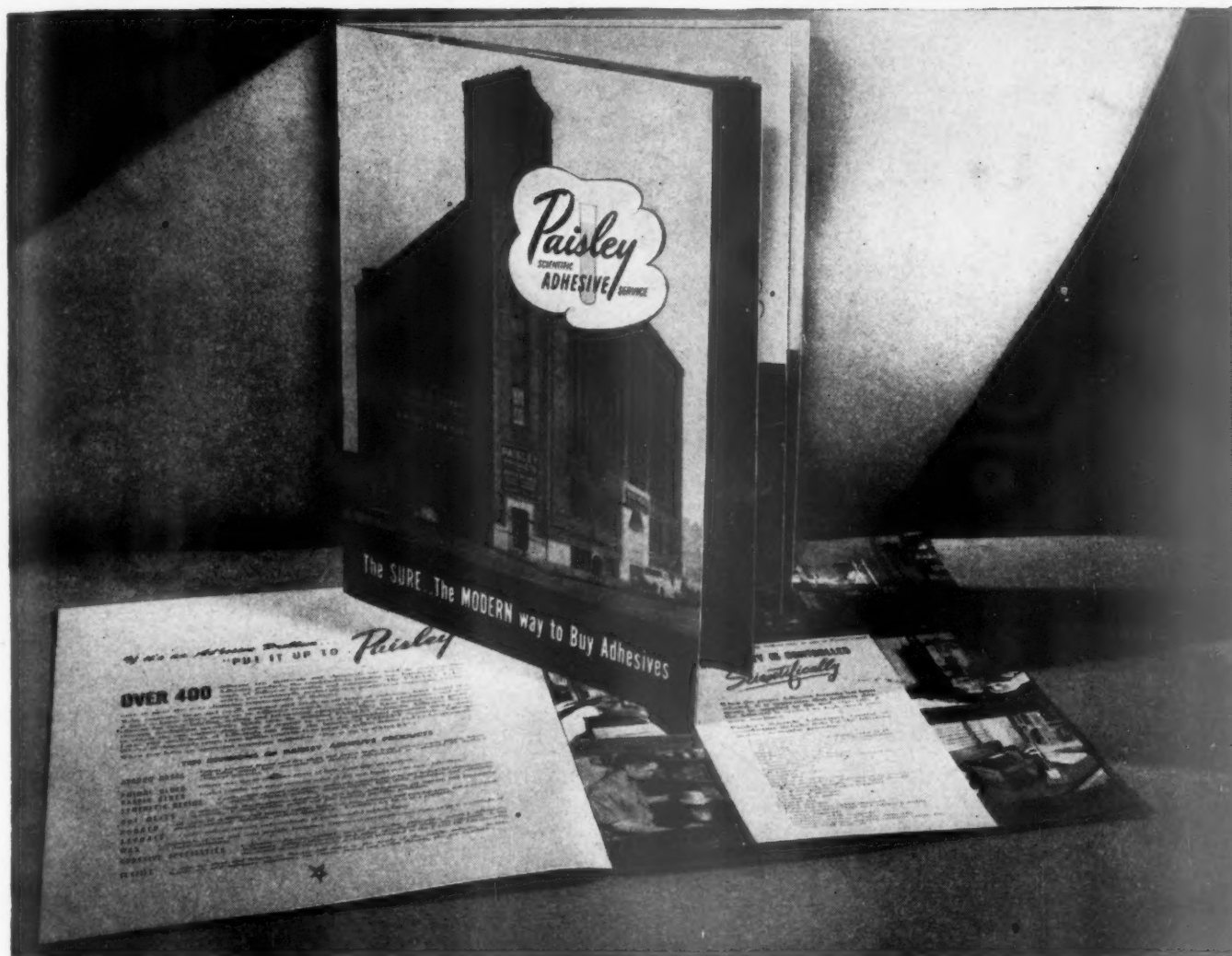
*ask
Eastern
for the
answer
when
Stainless
is the
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**EASTERN STAINLESS
STEEL CORPORATION**
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Distributors' stock available in most areas





SEND FOR OUR NEW EIGHT-PAGE ADHESIVE FOLDER

Everyone uses adhesives! From the simple white Library Paste of your kindergarden days, to the highly developed formulas for modern industry, adhesives are used universally. Yet how few understand even the elementary principles of their production.

We've prepared this attractive new eight-page folder to help industrial users and buyers of adhesives to gain greater knowledge of this increasingly important subject. For buying efficient adhesives is no longer a simple matter. Depending upon the

operation involved, it may require all the skill and resourcefulness of "Paisley Scientific Adhesive Service".

So, avail yourself of the opportunity to benefit by the valuable adhesive information this folder contains. Learn more about the Paisley way of creating, producing, and controlling a modern adhesive formula. Will you use the coupon provided here, in sending for your copy? Be sure to tell us the TYPE of business you conduct. This information will permit us to include other valuable data pertinent to your business.

ATTACH THIS COUPON TO YOUR LETTERHEAD AND MAIL!

Gentlemen:

Please send us a copy of your new, free, eight-page folder entitled "The SURE... The MODERN way to Buy Adhesives". I am indicating below the kind of business we conduct. Include any other information on adhesives that specifically apply to our business.

FIRM _____

STREET _____

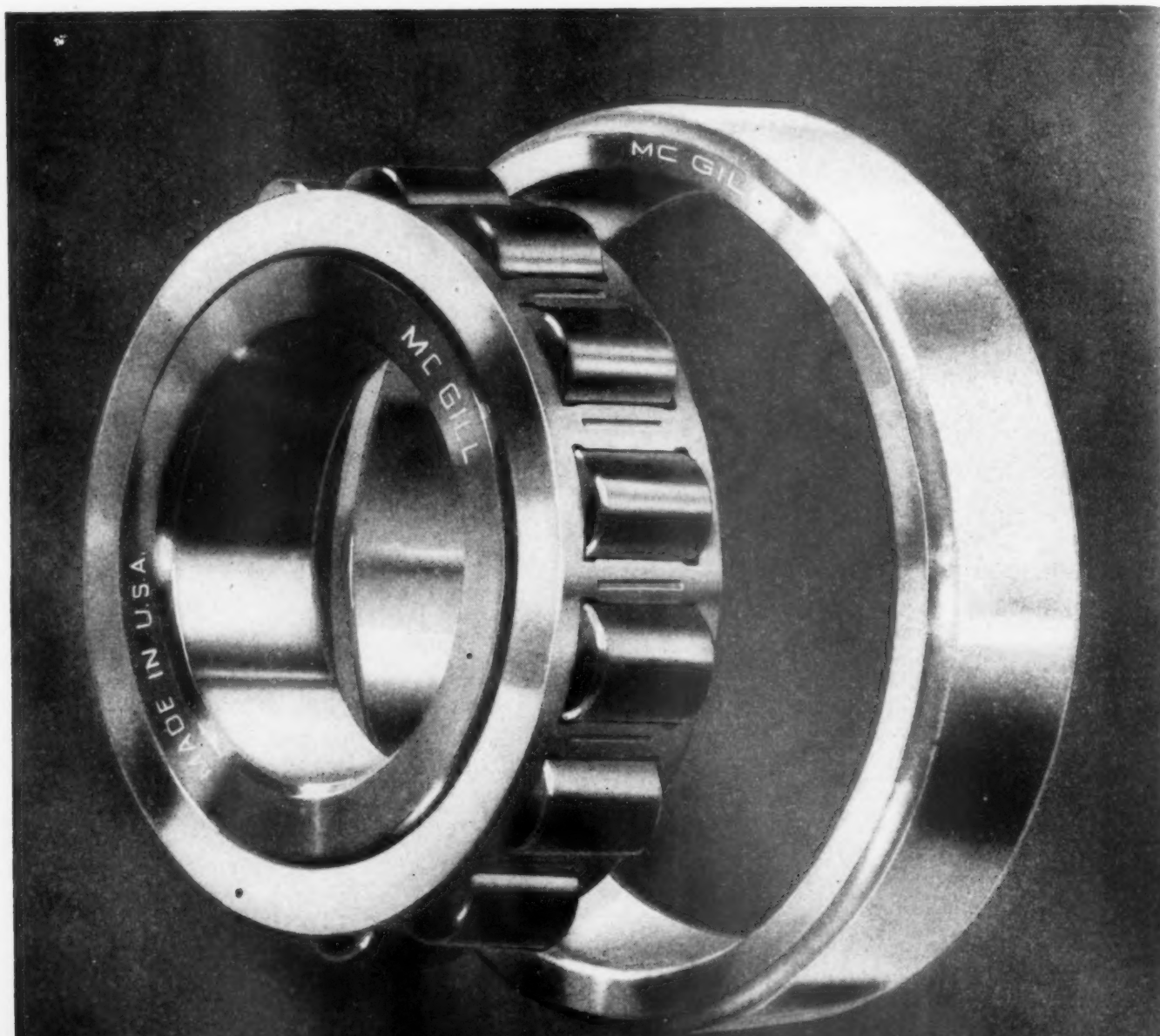
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TYPE OF BUSINESS _____

PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements, and Related Chemical Products

1770 CANALPORT AVE., CHICAGO 16, ILL. ★ 630 W. 51st STREET, NEW YORK 19, N. Y.



McGILL *SPECIAL* BEARINGS

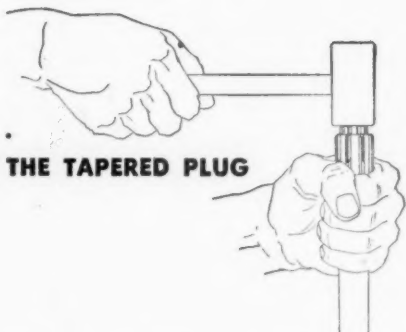
WITH *Bronze Retainers*

Being precision-built, with precision tolerances, McGill Roller Bearings with Bronze Retainers meet modern industrial needs. Engineers are increasingly appreciative of their trouble-free performance, their extra load capacity and long life. McGill Bearings are made in a wide range of types and sizes.

SPECIAL BEARINGS can be made to fit almost any requirement. Write our Engineering Department regarding your specific bearing needs.

McGILL MANUFACTURING CO., INC., VALPARAISO, INDIANA
MANUFACTURERS OF BALL AND ROLLER BEARINGS

TO EXPAND ...
JUST DRIVE IN THE TAPERED PLUG



Staples

CARBOLOY-TIPPED EXPANSION REAMERS

PRECISION...

**again and again
and again—
WITHOUT REGRINDING**

Expand the solid body of a Staples *exclusive* Expansion Reamer. Tilt back the diamond-lapped Carboloy Cemented Carbide cutting edges. Do this again and again, without regrinding ... and get precision every time.

Instead of regrinding, simply drive in the tapered plug and increase the diameter of the reamer to compensate for the amount that has worn.

The patented Staples Expansion Reamer is made with a one-piece body—not split. This means rigidity—and rigidity means precision. Your results are finer finish, longer tool life ... real economy.

This exceptional tool met the exacting standards of wartime construction. It is one of a line of quality circular cutting tools used wherever very close tolerances are held. Standard tools in stock for immediate shipment. Special tools designed.

THE STAPLES TOOL COMPANY

Formerly Staples Tool & Engineering Company

CINCINNATI 25

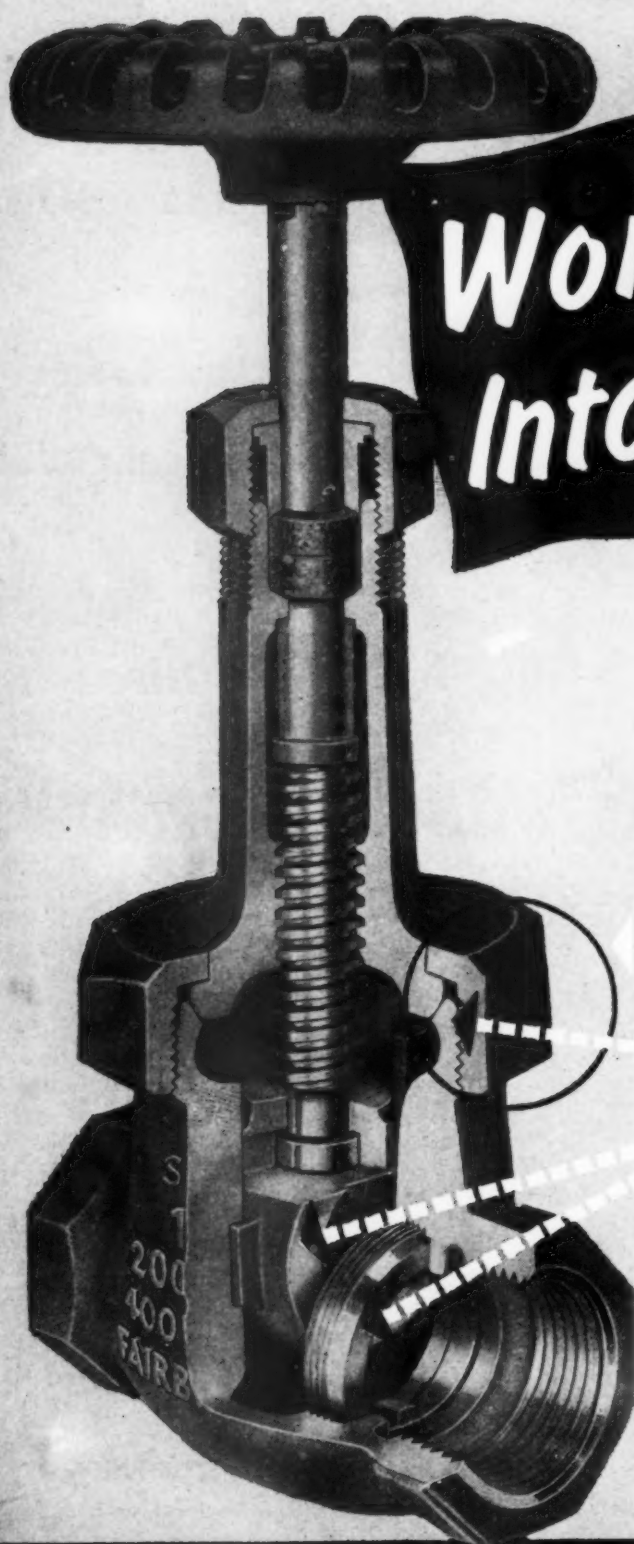
OHIO

Staples

CARBOLOY-TIPPED CIRCULAR CUTTING TOOLS

REAMERS • CORE DRILLS • SPOT FACERS • COUNTERBORES • END MILLS •
SHELL END MILLS • ALSO A COMPLETE LINE OF CIRCULAR SPECIAL TOOLS

American industry flows through fairbanks valves



**Worth Looking
Into** ...One Fairbanks Valve
...Three Fairbanks Features

**Union Bonnet Bronze Gate Valve
for 200 lbs. Steam, 400 lbs. Water,
Oil and Gas Pressure (Non-Shock)**

While no picture can do full justice to ruggedness of design and construction, the big cut-away view gives you at a glance the most important features of a widely applicable valve suited for severe operating conditions in processing and other work.

Union bonnet construction provides for easy dismantling and reassembly where frequent cleaning or inspection is necessary. Threads on outside of body are not subject to attack by fluids in line.

Heavy octagonal bonnet nut holds radial body bonnet joint in pressure-tight alignment.

Nickel alloy wedges and renewable seat rings provide extra long service through hardness and resistance to corrosion under pressure. Valve may also be had with integral bronze seats.

This valve is furnished with rising or non-rising stem. Low in maintenance cost, this 200 lb. bronze gate valve is typical of the Fairbanks line of bronze, iron body, and all-iron valves. Write today for further information.



THE fairbanks COMPANY

393 LAFAYETTE STREET, NEW YORK 3, N. Y.

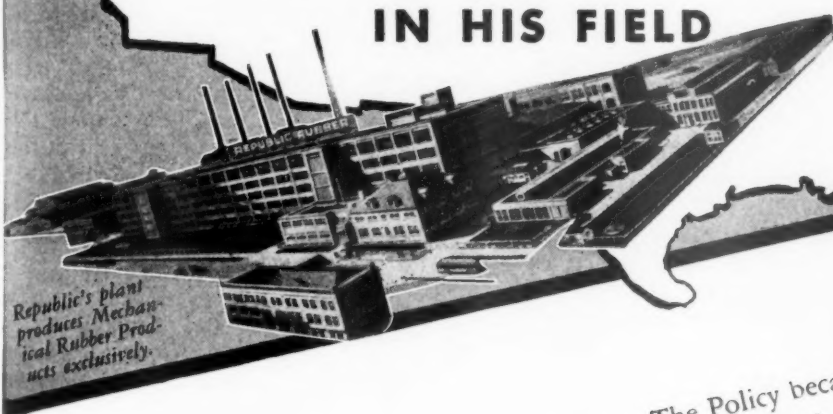
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IT'S WORTH LOOKING INTO BY EVERY INDUSTRIAL DISTRIBUTOR interested in a feature-crammed profit-building valve item "made to order for orders" . . . strongly backed by the long-established name of a well-known manufacturer.

**THERE ARE
DEFINITE REASONS FOR YOUR
REPUBLIC DISTRIBUTOR'S
Leading Position
IN HIS FIELD**



Republic's plant
produces Mechan-
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ucts exclusively.

**YOUR REPUBLIC
DISTRIBUTOR'S** ability to provide prompt delivery and complete technical service on your belting and hose needs stems from a factory-distributor relationship which is as exemplary today as it was in the earlier struggling days of the independent jobber. Republic pioneered in the adoption of the mill supply house system as an exclusive outlet. The company backed its conclusion that the distributor was the key to greater economy in the flow of goods from factory to consumer by drafting and publishing...in 1923...its 5-Point Distributor Policy.

The Policy became, as it stands today, an unalterable guide for complete cooperation between Republic and its nationwide distributor network. Then, as now, Republic was committed to provide a complete line of top quality rubber products, freedom from factory competition, technical training and assistance, other selling and servicing helps. In return, your Republic Distributor has been able to operate his organization at maximum efficiency...furnish the type of service which saves you time, trouble and expense on mechanical rubber requirements.

WE ARE
PARTICIPANTS IN THE
OWNERSHIP AND OPERATION
OF
NATIONAL SYNTHETIC RUBBER
CORPORATION

REPUBLIC RUBBER

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LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O.



LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA.

CHASE

proudly presents



**A great new name
on burlap**

• Yes, it's a great new name—and it means great new things for buyers of burlap bags. It means, first of all, that Chase is again importing burlap direct from India's top mills.

But even more, it means this burlap has had to meet Chase's rigid specifications. Specifications, by the way, that are based on nearly one hundred years of experience in making burlap bags for every purpose.

Chase TOPMILL has been thoroughly tested for tensile strength, and inspected for finish and appearance *before* it was made into bags. Remember this great new name—TOPMILL—it's tops for many uses!

Right now, with a shortage of cotton bagging, you can probably find additional uses for TOPMILL burlap bags. For example, feed, flour, seed, fertilizer and hundreds of other products can be packed in TOPMILL. Consult today with your Chase representative.



CHASE BAG CO.

GENERAL SALES OFFICES
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CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS
CHAGRIN FALLS, O. • HUTCHINSON, KAN. • WINTER HAVEN, FLA.

F.O.B. *Philosophy of buying*

WE notice in the program announcement for the annual convention of the Education Buyers Association that the Executive Secretary of N.A.P.A. is billed to speak on "What's New in Purchasing". This would seem to be the cue for the Editor of PURCHASING to start discussing the topic "From One P.A. to Another".

ALL this and heaven too! Contending that the negotiation of a new wage schedule constituted "an act of God", a Milwaukee printer tried to up his contract price for printing the daily police bulletin by 30%, retroactive to January 1. He was overruled by the city's legal department, which declined to recognize the element of divine intervention that would have permitted a contract revision.

THE strategy that started out as a squeeze play has turned out to be a hit-and-run. Cost increases that industry was blithely instructed to "absorb" are being passed along to the buyer, as everyone outside of Washington predicted long ago must be the case.

NEW definition of business stability: a system under which contracts are accepted only with the provision for prices prevailing at time of delivery, and are issued only with escape clauses to enable the buyer to get out of what may prove to be a bad bargain.

THE fellow who went out into the market to buy postholes will sympathize with the experience of the W. L. Maxson Corp., which had to pay the Navy \$1 for a hole in the ground in connection with the purchase of a war plant at Taftville, Conn. When the itemized bill of sale was made out, it failed to include one cement-lined pit, 10 x 8 x 6 feet deep. The meticulous system of property responsibility

made it necessary to dispose of this asset by formal sale, just like any other item, or the whole deal was off. Navy requested Maxson to buy the hole for \$1, to complete the accounting on the sale. Maxson countered with the argument that the hole didn't really exist; their inspectors had thrust their hands into the designated spot and felt nothing whatsoever. They argued further that they could keep the Navy in the hole by demanding that they remove the hole as wholly unwanted. But in the end, though they still felt that they were getting nothing for something, the company wholeheartedly accepted the Navy's suggestion to cement the wholesome relationship existing between the two parties, and decided to close the hole matter by buying the whole hole. The moral of this story is that one way of getting out of a hole is to sell it. Or, be sure that there aren't any holes in your contract.

RADIO station WIBC, Indianapolis, devoted a recent session of its "Speak Up, Indiana" forum hour to a consideration of the proposed employment of a Purchasing Agent for Marion County as a step toward the modernization and improvement of county government. With two speakers on either side of the argument, it developed into a spirited debate. Some of the points advanced were:

Con (Frank Richards, Chief Deputy County Advisor): "It would require the setting up of a new department of government and actually impose another unnecessary burden on the taxpayer."

Pro (County Councilman Richard Smith): "A Purchasing Agent was placed at the Sunnyside Tuberculosis Hospital after public criticism of the purchasing methods there, and the cost of many supply items dropped as much as 20% or 25%, while the administrative officials of the hospital reported that the quality of purchases improved."

Con (William Bosson, Jr., President of the County Commissioners): "Anyone who wants to bid has the right to bid, and it certainly

doesn't take a Purchasing Agent to do that."

Pro (Carl Dortch, Governmental Research Director, Indianapolis Chamber of Commerce): "We are using the same purchasing methods to buy multigraph machines, fluorescent lighting and other intricate equipment as we did when the buying list consisted of quill pens and coal for a potbellied stove at the poor farm. We are attempting to run county purchasing with a three-cylinder engine when we should be using jet propulsion."

NINE out of ten of the cards are stacked in favor of inflation, said John W. Snyder on January 1st, in urging the continuation of price control. In listing the ten salient factors, the one bright spot he found was food—"almost the only important consumer item in which we can foresee an early likelihood of supply balancing demand." Now we face the curious and tragic situation of achieving an economic balance in the one field where the lack of a humanitarian balance is causing untold suffering and misery throughout the world.

NOT mentioned in Mr. Snyder's list, but of major importance in the present situation, is the fact that current tendencies to deflate the Purchasing Agent and his job are definitely inflationary in their effect.

LET'S stop feeding inflation, says a slogan of the National Association of Manufacturers. Amen. And let's do everything in our power to feed the hungry.

OPTIMIST of the month is City P. A. Charles Kelleher of Haverhill, Mass., who announces "a plan to save money by purchasing supplies for the Hale Hospital and city infirmary through the Federal Surplus Commodities Division."

FORECAST of industrial requirements: Among the miscellaneous items offered to industry by the Navy's Material Redistribution and Disposal Office, we note one lot of 72,000 bottles of red ink.



In the Spotlight!

Outstanding performance always wins recognition and acceptance . . . In the field of Wire Rope, "HERCULES" (Red-Strand) long ago won its place "In The Spotlight" because of its uniform reliability and economy in every industry that calls for "heavy duty" action.

You won't go wrong when you adopt the Red-Strand as your buying guide for wire rope. As "HERCULES" is furnished in both Round Strand and Flattened Strand construction, and in either the Pre-formed or Non-Pre-formed type—you are assured of adaptability as well as of high quality.

Ask our Engineering Department to recommend the type and construction best suited to your needs.

MADE ONLY BY
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SEATTLE • 3410 First Avenue South



Airco Oxygen...

...ALL YOU NEED...WHEN YOU NEED IT!

Whether you need a hundred cubic feet or a million . . . whether you need an occasional cylinder or a constant supply of high purity oxygen . . . there's an Airco depot near you ready to meet all your requirements — with the right type of "package."

If your consumption of oxygen is large, the Airco trailer delivery system offers the greatest measure of convenience and economy. Oxygen is available in trailer capacities of approximately 10,000, 20,000, and 40,000 cubic feet. These can be placed at any suitable location of your plant.

If your consumption is moderate or small, Airco oxygen is delivered in standard steel cylinders in what-

ever number and frequencies best serve you. But whether small or large, your requirement is filled the way you want it.

Airco has always pioneered in the creation of new and better methods of oxygen delivery — and *Airco looks to the future!* Tomorrow, you can expect even more important improvements — thanks to Airco's foresighted research and development program.

For assistance in developing or improving an internal gas distribution system geared to your operations . . . talk with an Airco technical man. Write your nearby Airco office, or: Air Reduction, 60 E. 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas.



AIR REDUCTION
60 East 42nd Street
New York 17, N. Y.

An interesting booklet
... "Oxygen — Indispensable Servant of Industry"
... is available. Fill in and mail this coupon for your copy.

Firm _____
Signed by _____
Address _____
City _____ Zone _____ State _____



AIR REDUCTION

Offices in All Principal Cities

ORIGINATORS OF MODERN OXYACETYLENE METHODS FOR THE METAL WORKING INDUSTRY



Visit our Exhibit
Booth 91 at the
Inform-a-Show,
Chicago, May 27
to 29th, 1946

Enduro Pays in many ways

Improved Employee Relations
Easy to Clean
Sanitary Surfaces
Non-Contaminating
* Strong—Long Lasting
Resistant to Rust and Corrosion
Easy to Fabricate
Universal Acceptance
Low Ultimate Cost

High strength and extra long life are assured in all types of packing and processing equipment, when made of sanitary Republic ENDURO Stainless Steel.

Why? Because lustrous ENDURO ranks among the toughest, strongest of all metals. It does not rust or corrode . . . and its smooth, hard surface lasts indefinitely, no matter how severe the service, nor how many times it is cleaned.

Hundreds of ten and fifteen year old installations, in which ENDURO equipment still looks like new, afford convincing proof of the long, trouble-free service which ENDURO provides.

For more detailed information on these and the many other reasons why it pays to specify Republic ENDURO Stainless Steel in your equipment, write directly to:

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

These tripe cooking baskets, made of Republic ENDURO Stainless Steel, have been in constant use since 1936.

Republic

ENDURO STAINLESS STEEL

Reg. U. S. Pat. Off.



Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Bolts and Nuts, Tin Plate, Tubing



Well, maybe not
DIRTY LOOKS!



No! No!
NOT this kind of **STRIPPER**



**EXCEPT FOR, POSSIBLY,
LEOPARDS AND SUCH,**



With the
exception of
**BLACK
SHEEP—**

Will be there...

**...AT THE INFORM-A-SHOW
STEVENS HOTEL, APRIL 27, 28, 29**

Yes, we'll be there—at Booth #6—so let's get acquainted. Perhaps we can be of real service to you. For whatever the cleaning problem—from pop bottles to locomotives—there's a Turco Industrial Cleaning Compound that will do the job better, faster, easier. And there are many new materials now available that you will want to discuss. So let's talk it over.



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INDUSTRIAL CLEANING COMPOUNDS

TURCO PRODUCTS, INC. Main Office & Factory: 6135 S. Central Ave., Los Angeles 1
Offices & Factories: 125 W. 40th St., Chicago 9 - 1806 S. Henderson St., Houston 1, Texas
New York Office: 415 Greenwich St., New York 13 - Offices & Warehouses in All Principal Cities



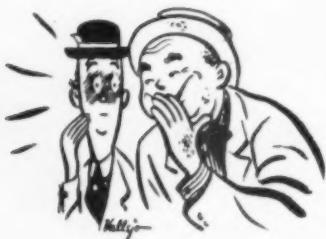
**ZEBRA DE-
STRIPING**



You can't do much
ABOUT A POLECAT



**NOT FOR SONNY'S EARS
—PERHAPS**



Well, maybe not
DIRTY STORIES



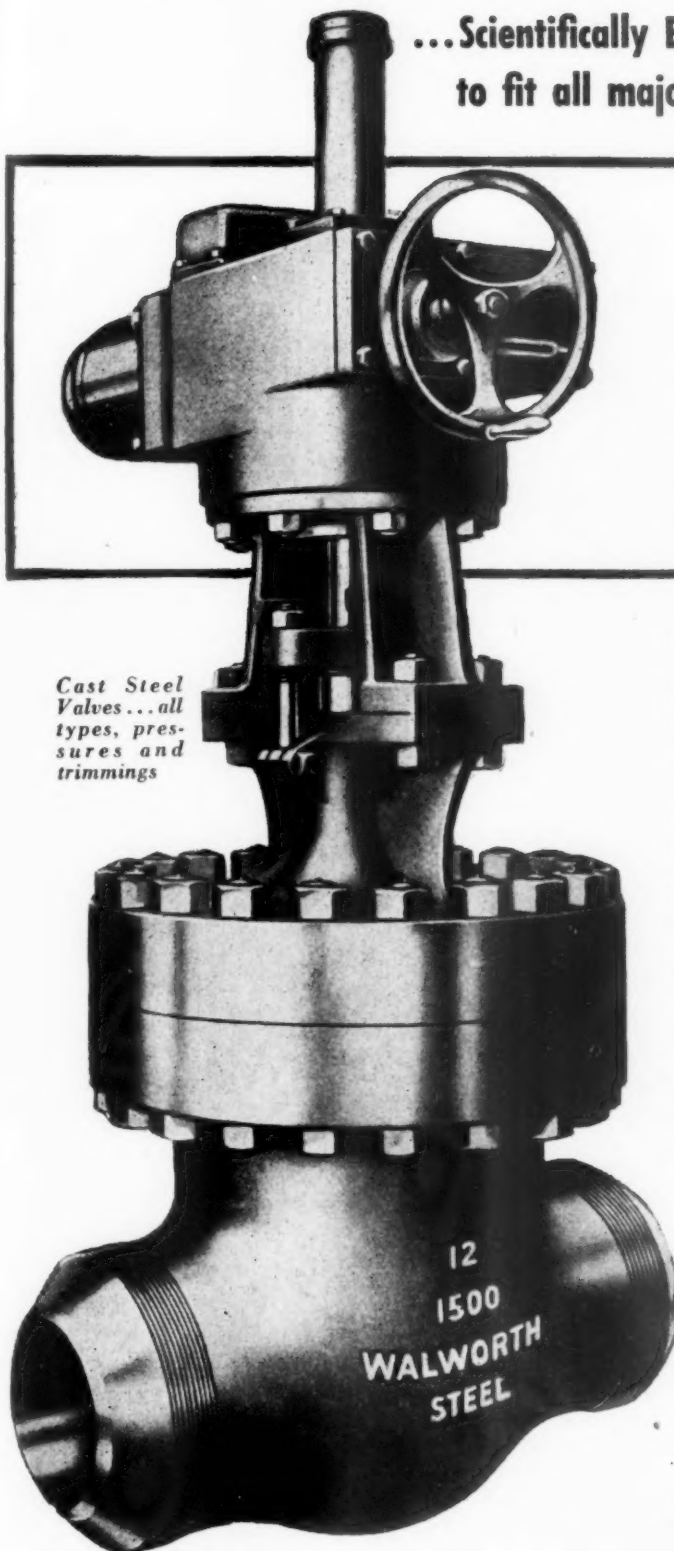
EXCEPT FOR BLACK EYES—



**EVEN INCLUDING
ALABASTER BLONDES,**

WALWORTH VALVES

...Scientifically Engineered
to fit all major services



*Cast Steel
Valves...all
types, pres-
sures and
trimmings*



*Bronze Valves...
all types; all pres-
sures*

*Lubricated Plug
Valves...all
metals and pres-
sures*

Since 1842, Walworth has manufactured valves for every piping requirement... scientifically engineered to assure maximum economy and worry-free performance. Each Walworth Valve has all the characteristics required for its special service.

For example, Walworth makes a complete line of cast steel valves. They come in gate, globe, and angle types with weld ends, screw ends, or flange ends. Heavy, rugged walls give enduring strength. Deep stuffing boxes eliminate troublesome leakage. Streamlined ports decrease pressure drop. You don't have to be an "expert" to recognize the fact these Walworth valves have what it takes to lick your toughest jobs.

For acids, alkalis, condensates, organic solvents, slimes, slurries — and vacuum the answer is found in a Walworth lubricated plug valve. It opens or closes with but $\frac{1}{4}$ turn of the valve handle, and a positive tight shut-off is assured. It's easy to operate and remains completely sealed against leakage in both the open and closed position.

Where Bronze Valves are required, Walworth's are famous for their economy and long, reliable service. In design and construction the complete line reflects the usual sturdiness and efficiency of all Walworth valves, the result of "know how" gained by more than a century of valve manufacturing experience.

For full information on Walworth's complete line of quality valves get in touch with your Walworth distributor, or write for a free copy of Catalog 42.

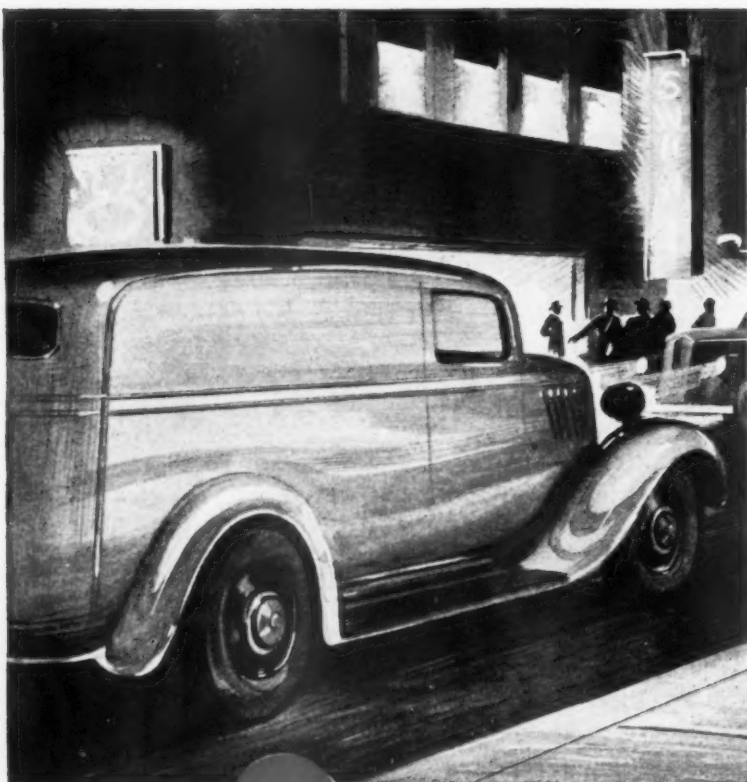
Walworth VALVES AND FITTINGS

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

NEW IMPROVED SUPER-LUBRICANT

**FOR TOUGHEST LUBRICATION JOBS
IN ALL INTERNAL COMBUSTION ENGINES**



BASICALLY DIFFERENT... SPECIALLY REINFORCED!

- Resists Formation of Sludge, Lacquer, Carbon
- Removes Hard Carbon
- Stronger Protective Film
- Non-Corrosive—Safe
- Keeps Piston Rings Free
- Adds Power, Saves Fuel, Saves Wear and Shut-down Time

Accepted by Leading Engine Manufacturers as a Superior Lubricant for Heavy Duty Engines.

LION *Naturalube* **D.H.D. OIL**

Naturalube D.H.D. is made from a rare and basically different crude oil. This unusual crude gives D. H. D. a much stronger protective film than ordinary oils . . . greater ability to penetrate to all moving parts . . . greater adhesiveness . . . and the natural ability to remove hard carbon deposits from valves, rings and pistons. In addition, Naturalube D. H. D. is reinforced to prevent the deteriorating effects of heat and oxidation, and to resist the formation of harmful sludge and lacquer. It is also non-

corrosive — safe!

When you use D. H. D., engines are cleaner . . . rings, valves and pistons operate freely for longer periods . . . filters, screens and oil lines do not clog and prevent proper lubrication of all parts. Because Naturalube D. H. D. removes carbon, there is no hard-carbon scuffing. The general performance of your engine is improved, operating and maintenance costs are lower, and shut-down time is held to a minimum. D. H. D. saves wear, adds power, saves fuel. Try it.

For normal service where D. H. D. is not required, use Naturalube Motor Oil (not so heavily reinforced).

POSITIVE MONEY-BACK GUARANTEE

Your money returned if you don't believe Naturalube to be the best oil you ever used.



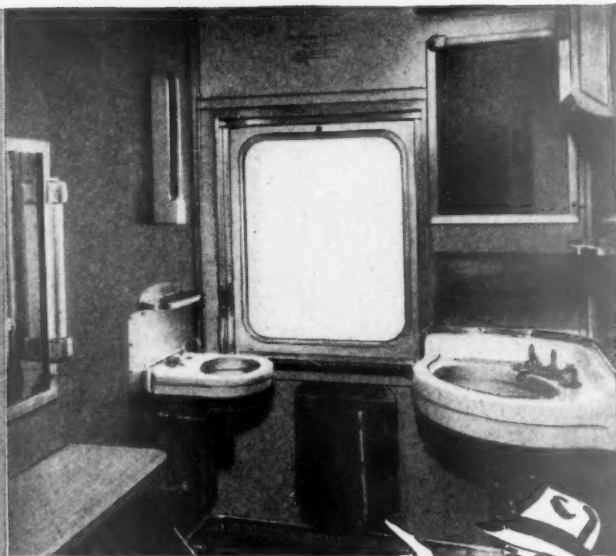
LION OIL COMPANY

**EL DORADO,
ARKANSAS**

INDEPENDENT INVESTIGATOR FINDS

*Phillips Screws
pay Pullman*

**big money savings for
hundreds of driver skids eliminated!
Hold better ... look better!**



Investigators from James O. Peck Co., industrial research authorities, are visiting a number of representative plants to get authentic FACTS on assembly saving. Get the "INSIDE STORY" of successful assembly practice — read his fact-filled reports!



"When we used slotted screws, we had plenty of trouble with drivers slipping and puncturing the pressed wood panels we use by the thousand for inside trim," a Pullman assembly executive told the investigator. "This meant removing and discarding the panel, replacing and

hand-painting — to the tune of several dollars per skid. Phillips Screws ended driver skids. But that's only one way they pay off.

"Where the heads show in the finish they look better. They don't have to be lined up, like slotted screws, which means they can be set up tighter to resist vibration.

"Railroads like them because they can't be loosened by passengers with coins or nail files like slotted screws — to tear clothes and cause damage claims."

REPORT TELLS MORE PHILLIPS ADVANTAGES

The investigator asked Pullman the same questions you would ask about assembly methods. The report tells you the complete, revealing answers.

It's one of a series of assembly studies covering all types of products — metal, plastics, wood — being made to show how the many Phillips Screw advantages add up big savings you can make in your assemblies.

The reports now ready — and more to come — comprise a practical manual of modern assembly methods — never-before-printed information — inside facts you'd pay good money to get — and you can have them, now, FREE!

PACKED WITH IDEAS FOR SAVINGS IN YOUR ASSEMBLIES

Find out how industry's top-flight assemblers licked problems like your own! Get these reports! Don't wait — fill out and mail the coupon TODAY!



PHILLIPS SCREW MFRS.,
c/o Horton-Noyes

2300 Industrial Trust Bldg., Providence, R. I.

Please send me the reports on Assembly Savings with Phillips Screws

Name

Company

Address

PHILLIPS *Recessed Head* SCREWS

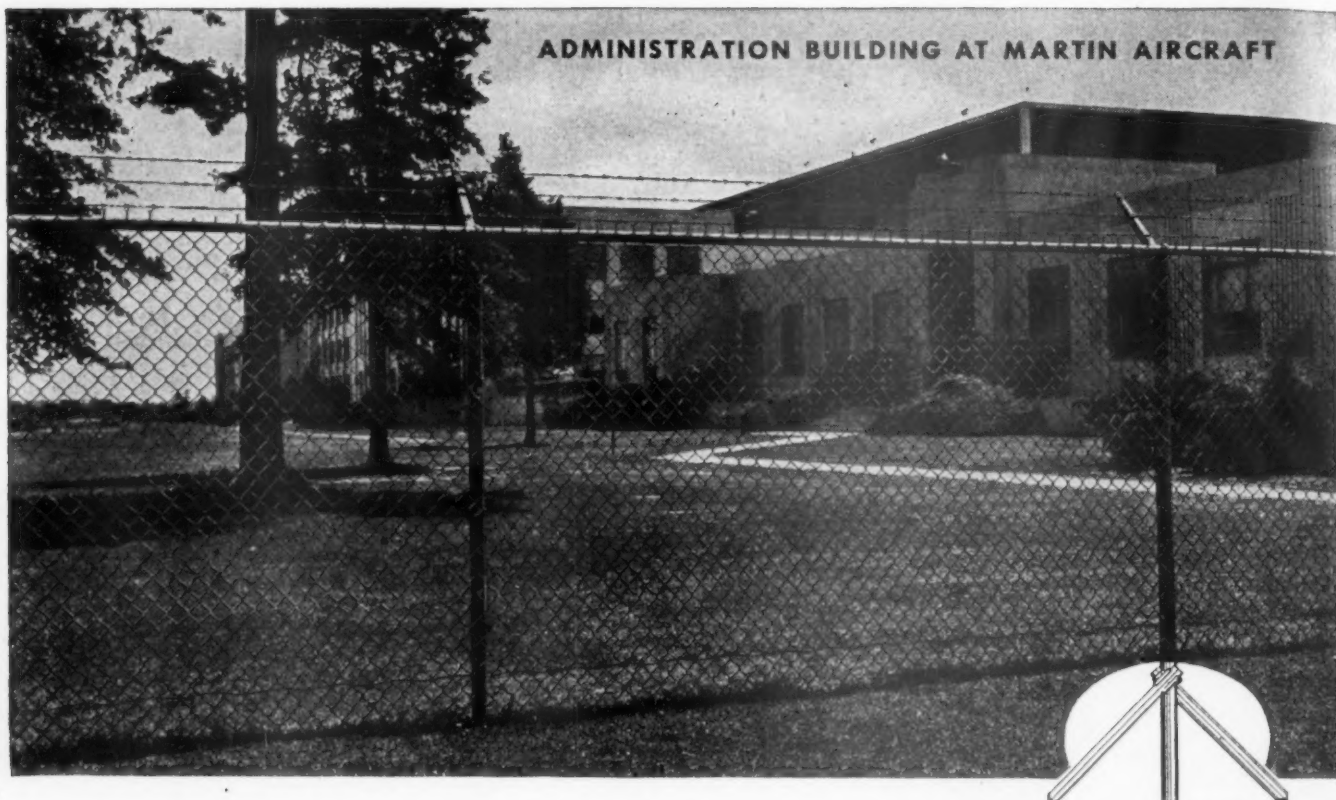
Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

26 SOURCES

American Screw Co.
Atlantic Screw Works
Atlas Bolt & Screw Co.
Central Screw Co.
Chandler Products Corp.
Continental Screw Co.
Corbin Screw Div. of
American Hdwe. Corp.
The H. M. Harper Co.
International Screw Co.
Lamson & Sessions Co.

Manufacturers Screw Products
Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation

Pawtucket Screw Co.
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Bolt & Nut Co.
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The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
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Wolverine Bolt Company



ADMINISTRATION BUILDING AT MARTIN AIRCRAFT

Why *Martin* Specifies ANCHOR FENCE

Says The Glenn L. Martin Company: "We have standardized on Anchor Chain Link Fence for many years . . . first at Cleveland, and here in Baltimore since 1929. Nearly 10 miles of Anchor Fence now protect our plants, grounds and airport here at Baltimore. Despite our waterfront location, maintenance costs have proved negligible, and even Anchor Fences erected here in 1929 are still in excellent condition."

The pictures on this page show you some exclusive Anchor features, which help explain why Martin Aircraft and many other prominent companies specify Anchor Fence.

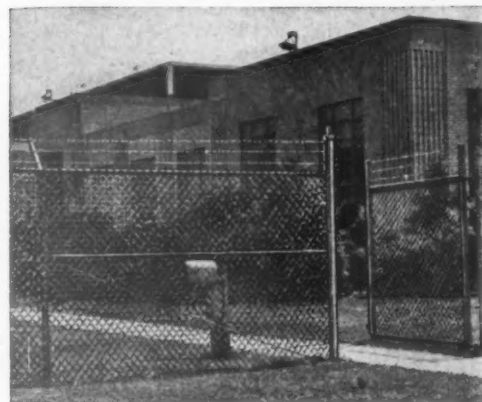


Send for this Book! Write today for our big Industrial Fence Catalog . . . packed with information, diagrams and ideas . . . and with photographs of Anchor Fence installations for many well known industrial users. Or let us have one of our experienced engineers call and give you the benefit of his knowledge in solving plant protection problems. Anchor Post Fence Co., 6615 Eastern Avenue, Baltimore 24, Md.

Anchor Fence

Nationwide Sales and Erecting Service

Exclusive with Anchor, deep-driven "Anchors" clamped to the posts form a 3-point anchorage deep in the sub-soil; hold posts permanently erect and in line in any soil or climate.

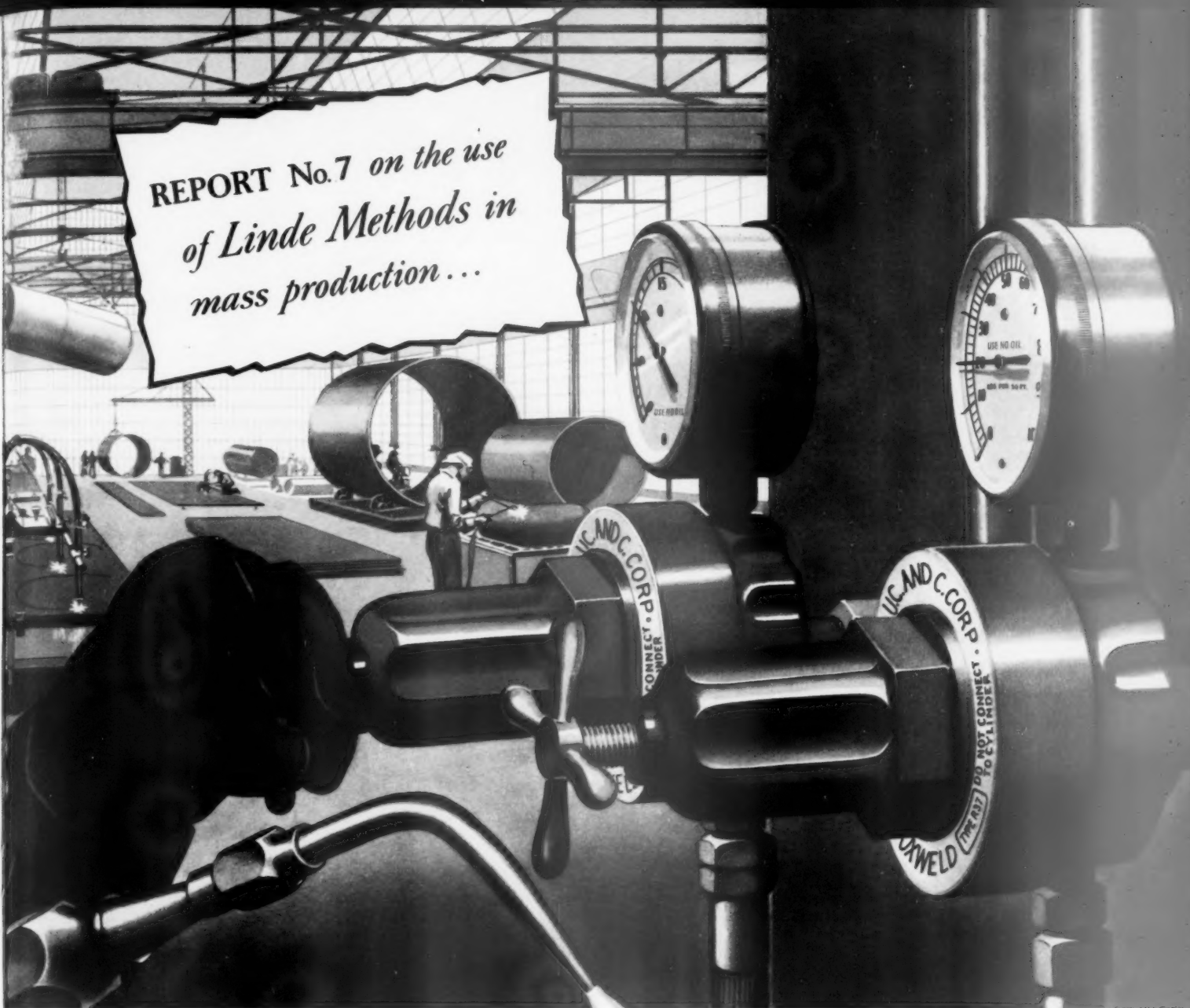


Square Terminal Posts, also exclusive with Anchor, improve appearance and are stronger than round posts of comparable size. Cross bracing to adjoining line posts increases rigidity.



The Barbed Selvage of Anchor Chain Link fabric and three strands of barbed wire stand ready to repel any attempt at climbing—protecting aircraft stored outdoors at Martin's.

REPORT No. 7 on the use
of Linde Methods in
mass production...



In METAL-WORKING PLANTS LINDE METHODS are Important in Many Steps of Manufacture

A continuous succession of Linde developments for oxy-acetylene flame-joining, cutting, forming, and treating metals has changed fabrication methods so much that in many metalworking plants oxygen and acetylene are now made as readily available as water and electric power. Equipment can be connected

to the supply line anywhere by means of convenient outlets, such as you see above.

In the sketch that you will see as you turn this page, are shown some of the many uses of the intensely hot oxy-acetylene flame in the production line. One of these—marked 8—is a relatively new one.

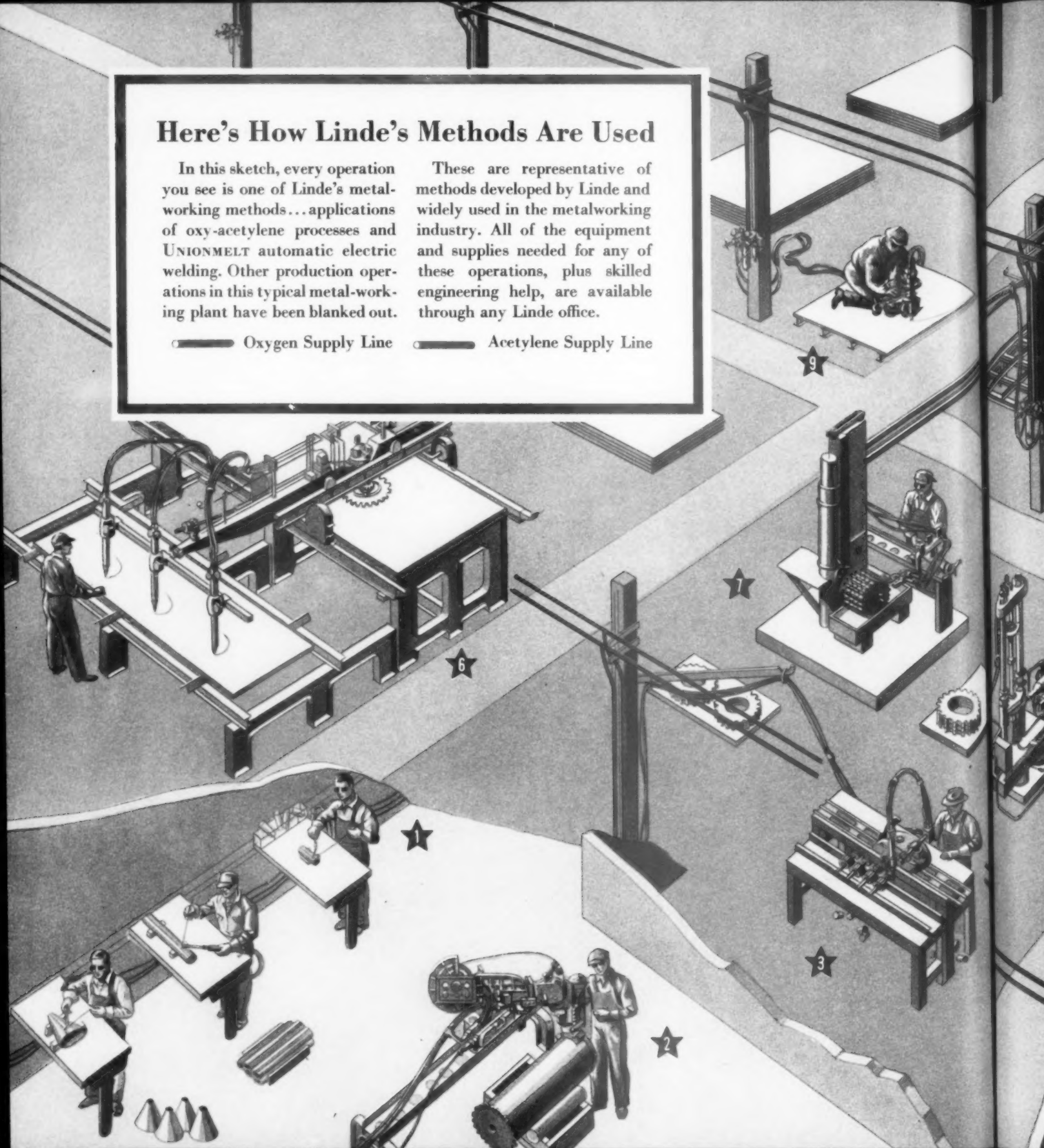
Here's How Linde's Methods Are Used

In this sketch, every operation you see is one of Linde's metal-working methods...applications of oxy-acetylene processes and UNIONMELT automatic electric welding. Other production operations in this typical metal-working plant have been blanked out.

These are representative of methods developed by Linde and widely used in the metalworking industry. All of the equipment and supplies needed for any of these operations, plus skilled engineering help, are available through any Linde office.

— Oxygen Supply Line

— Acetylene Supply Line



Methods developed by THE LINDE AIR PRODUCTS COMPANY

★ Manual welding of small assemblies.

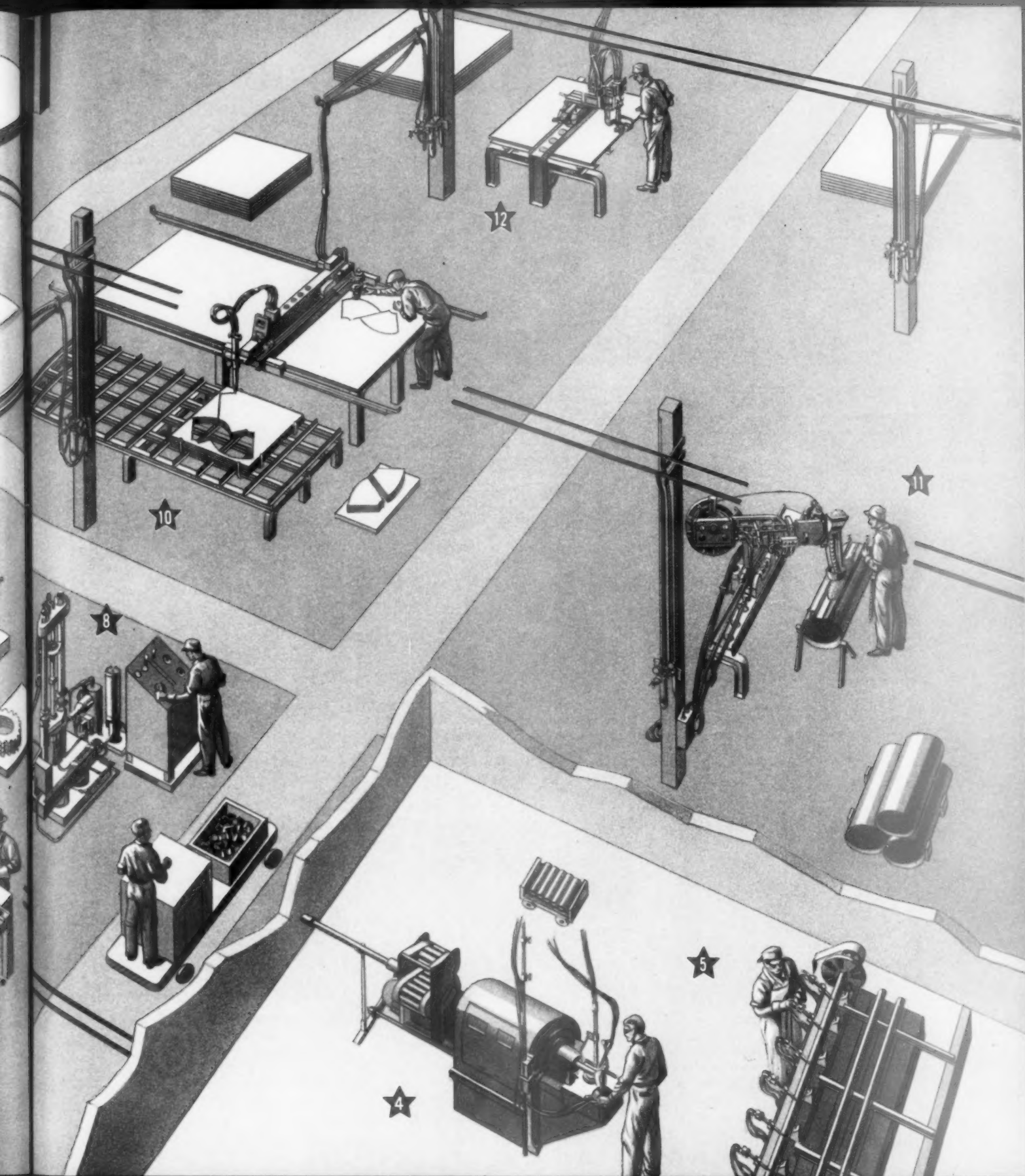
★ UNIONMELT welding of sprockets to drum ends.

★ Flame-cutting risers from cast gear blanks.

★ Flame-spinning of tubing to form end closures.

★ Flame-cutting tubing ready for spinning.

★ Shape-cutting three sprockets simultaneously.

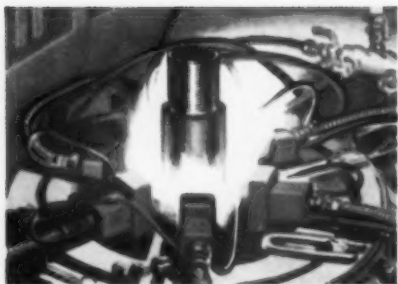


Simplify the Production of Metal Products of Many Kinds

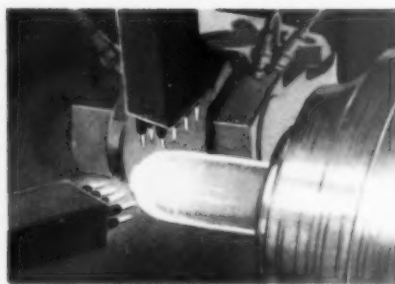
- ★ Flame-hardening to lengthen sprocket life.
- ★ Pressure-welding bearing sections to shaft.
- ★ Cutting drum heads with a portable flame machine.

- ★ Flame-cutting parts from stacked plate.
- ★ Welding the seam by the UNIONMELT electric process.
- ★ Flame-planing plate edges to be welded.

WHAT LINDE FLAME METHODS WILL DO



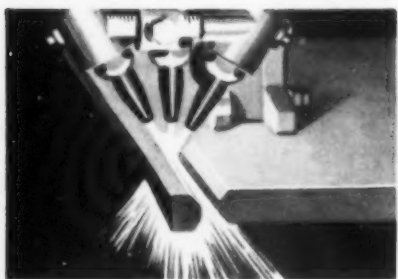
A hard, wear-resistant case can be given to local surfaces of hardenable steel by oxy-acetylene flames followed by a water quench. Chemical composition of the metal and toughness of the core are not affected.



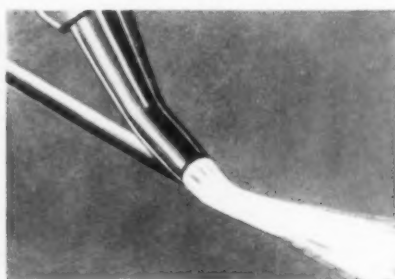
End-forming of tubular products, for completely or partially closing the ends, or for reducing diameters at any point, can be done without interruption by applying oxy-acetylene flames to rapidly spinning tubes.



Smooth - sweep bends in pipe of almost any diameter and at any angle can be made without thinning the pipe walls or impeding flow, by applying the intense, fully controlled heat of oxy-acetylene flames.



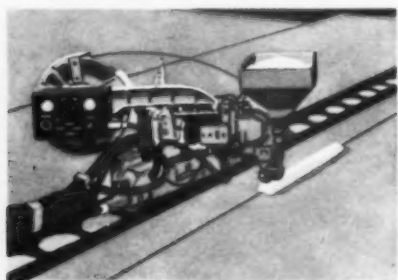
Preparing plate edges with flame-cutting equipment speeds trimming and beveling of plate preparatory to welded fabrication. Cuts in several planes can be made simultaneously, accurately, and at low cost and power consumption.



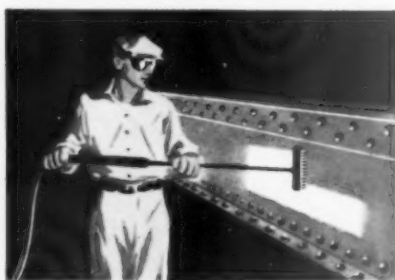
Grooving of metal surfaces, the preparation of plate edges for welded fabrication, the removal of temporary welds, and the preparation of cracks in castings for repair by welding are done easily with oxy-acetylene flame-gouging.



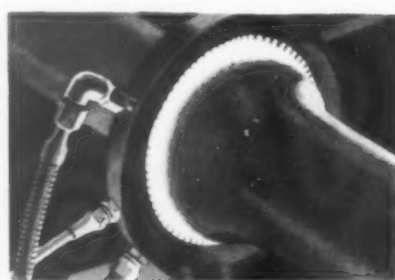
Parts of any size, shape, or thickness can be fashioned from stock steel plate quickly and accurately with flame-cutting machines. Flame-cut edges are smooth...frequently require no machining.



Automatic electric welding by the UNIONMELT process makes high-quality welds in steel of any thickness at speeds up to 20 times faster than other methods of welding with rods.



Oxy-acetylene flames remove scale, rust, grease, corrosive salts, and moisture from surfaces of steel prior to painting. Paint goes on faster, bonds tighter, lasts longer.



Pressure plus heat from oxy-acetylene flames applied simultaneously, quickly joins plate, pipe, shafting, railroad rails, and metal sections of the same or different metallurgical characteristics.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 E. 42nd St., New York 17, N. Y. **UCC** Offices in Other Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

The words "Linde" and "Unionmelt" are trade-marks of Union Carbide and Carbon Corporation or its units.

Other reports on the use of Linde methods in SHIPBUILDING, in STEELMAKING, METAL-FABRICATING, PIPE, PRODUCTION AND FABRICATION OF STEEL, and UNIONMELT WELDING will be sent on request.

IS THERE A NEW "BABY" IN YOUR COMPANY?

Have you a new product? Is it in powdered, granular, pebble, crystal or lump form? Does it require protection against moisture loss or absorption . . . loss of aroma or absorption of odors . . . dirt, sifting or contamination?

If you have a product like this, the Bemis Waterproof Bag is probably the ideal container. For years Bemis Waterproof Bags have provided manufacturers of many diversified products with these cost-saving advantages:

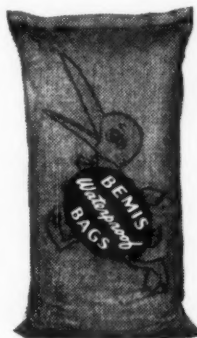
- Bemis Waterproof Bags cost

less than other containers that give the same protection.

- Filled or empty, they save valuable storage space.

- The light weight of Bemis Waterproof Bags means economies in shipping costs.

A useful new book, "7 Facts About Low-Cost Protective Packaging," tells how Bemis Waterproof Bags will serve advantageously as the container for your company's "new baby." Mail the coupon today for a free copy.



Get the Benefits of Scientific Bag Selection

Bemis Shipping Research Laboratory will determine the proper bag type for you — make tests to insure that materials specified will stand up under the packing, shipping and handling conditions your product will encounter—and maintain a constant check on these materials to make sure these rigid specifications are met.

WATERPROOF DEPARTMENT

BEMIS BRO. BAG CO.

St. Louis • Brooklyn

BEMIS BRO. BAG CO.,
111-U North Fourth St., St. Louis 2, Mo.

Please send your special booklet, "7 Facts About Low-Cost Protective Packaging," and details about use of Bemis Waterproof Bags for _____ (PRODUCT)

Name _____

Company _____

Street _____

City _____ State _____

WALDES

TRUARC RETAINING RINGS SPECIFIED FOR LEAR'S SERVO ACTUATORS



The Lear Triple Servo
--designed for application with the Lear Automatic Pilot.

DESIGNED FOR THE
AUTOMATIC PILOT
WITH SUPERHUMAN SENSITIVITY

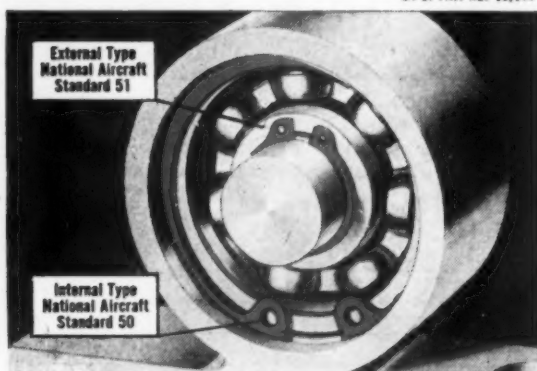
LEAR, INC.

"To eliminate excess weight in our Triple Servo Unit, and make every possible saving of space without loss of power, our design engineers specified Waldes TRUARC Retaining Rings. Retention by any other means was not even attempted. Our experience with Truarc, in other Lear units used in famous aircraft, precluded experimenting with other types of retainers. Truarc has made possible the lightest, most compact unit without sacrificing efficiency. Weight of the entire assembly is only 11.5 pounds."

NOW YOUR MACHINES CAN HAVE THE DESIGN ECONOMY of retaining rings regardless of load, stress or accuracy involved. Waldes TRUARC high precision retaining rings do the job of nuts, shoulders, collars and pins. Yet they allow lighter, more compact units—make assembly and disassembly quicker, easier. TRUARC rings give *better, more dependable* retention because their mathematically precise construction means perfect circularity—insures a never-failing grip. There's a Truarc ring for every mechanical product.

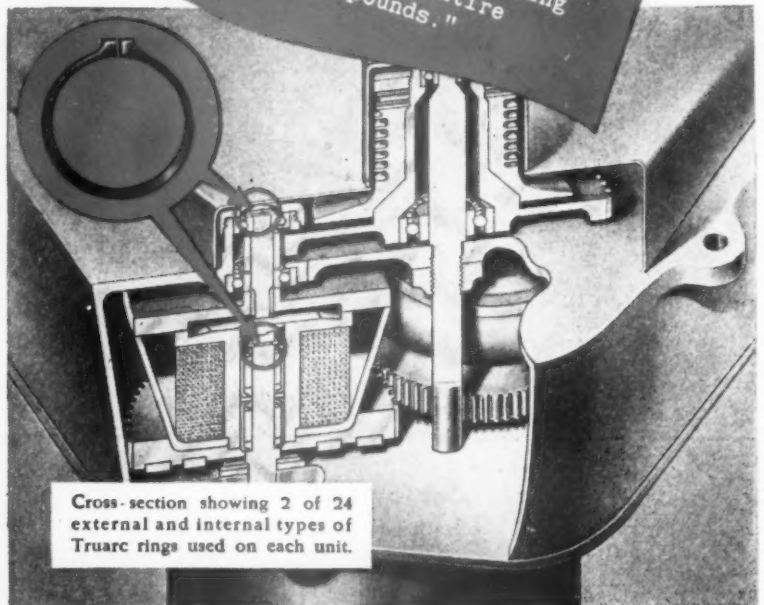
FREE! See how TRUARC can improve your product—cut production and maintenance costs. Write today for Truarc Booklet 30B showing industrial applications and design sketches.

U. S. PAT. RE. 18,144



External Type
National Aircraft
Standard 51

Internal Type
National Aircraft
Standard 50



Cross-section showing 2 of 24 external and internal types of Truarc rings used on each unit.

WALDES**TRUARC****RETAINING RINGS**

WALDES KOHINOOR INC., LONG ISLAND CITY 1, N. Y.

CANADIAN REPRESENTATIVE: PRENCO PROGRESS AND ENGINEERING CORPORATION, LTD., 72-74 STAFFORD STREET, TORONTO



Hose Racks and Reels Reach Remote Fires

Supplied with hose up to 150 feet in length connecting carbon dioxide cylinders with discharge horn, Kidde Hose Racks and Reels offer a highly effective means of fighting fires over a wide area.

They are particularly useful in fighting flammable liquid or electrical fires too large for hand portables, but not large enough to require a built-in system.

Kidde Hose Racks and Reels can be furnished with one or more 50-pound cylinders of carbon dioxide. In addition to the release valves on the cylinders, a temporary shut-off valve is furnished on

How to Make Fire KILL ITSELF

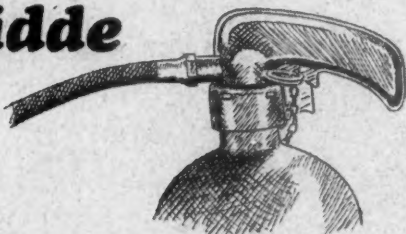


See how easily electrical and flammable liquid fires can be extinguished—completely automatically.

Write for free 12-page bulletin, "How to Make Fire Kill Itself." Walter Kidde & Company, Inc. 545 Main Street, Belleville 9, N. J.

the discharge horn. Full details are available from Walter Kidde & Company, Inc.

Kidde



THE SIMPLEST WAY TO FIGHT A FIRE!

With a Kidde Hand Portable, you just aim at the fire and pull the trigger.

Carbon dioxide capacities from
2 to 20 pounds.

Mail and Phone Orders Filled

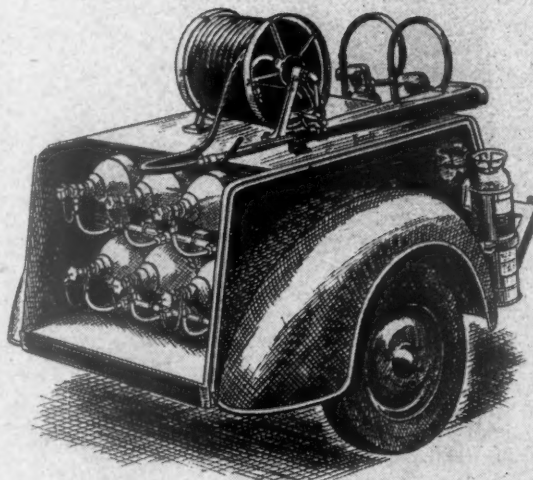
Kidde



AIMS STRAIGHT AT HEART OF FIRE

To kill flames fast, Kidde "local application" nozzles—supplied as part of built-in systems—aim the carbon dioxide discharge straight at the danger spot.

Kidde



Punch-packing Trailer

FOR INDUSTRIAL FIRE BRIGADES

Here's plenty of fire-fighting wallop in a compact unit! Just hook a Kidde Trailer Unit to a light truck—or even a motorcycle—and you're ready to fight fires practically anywhere in the plant.

Built to specification. A typical unit carries a hose reel with 300 pounds of carbon dioxide; two 15-pound carbon dioxide portables; two Kidde water extinguishers. Write for details.

MAIL AND PHONE
ORDERS FILLED

The word "Kidde" and the Kidde seal are



Trade-marks of Walter Kidde & Company, Inc.

Walter Kidde & Company, Inc.

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Strikers Snub 15-Cent Offer

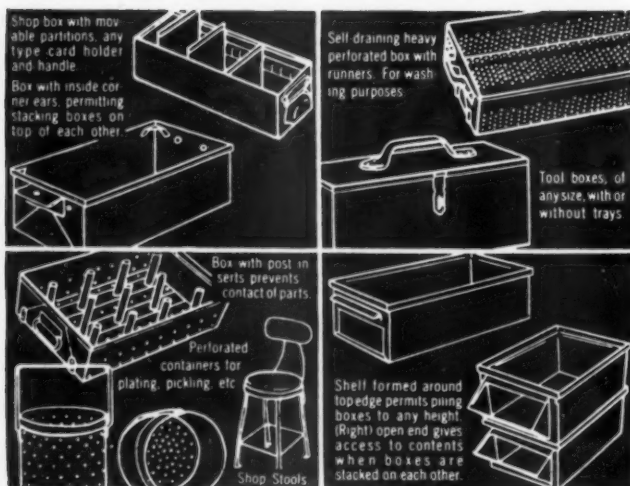
General output at factories and mines decreased 4 per cent in October, while in the first half of November...

Higher Pay Asked

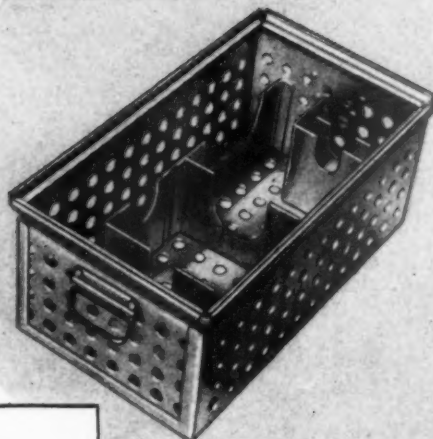
stationed in a little town in France for several months, wooed a French girl by telling her about...

Ny On

Someth was rep Board City month a cent exempl ary is semimon \$1,041.66 7/3 cent city



Steel Piling Box with fixed or removable partition designed to hold one set of parts needed for any given assembly or sub-assembly. Big time-saver.



Stacking or Piling Box of excellent design, strong and durable. Any size, to suit your needs. Above: Triple Hem Shop Boxes made with straight or tapered sides.



Shop Barrels, any style or size, built for long life and hard service.

Shop Stools with steel, solid wood or laminated wood seats. Sturdy reinforced legs, of any desired height.



Comfortable Back Rests of several different designs, may be had at a slight extra cost.

TO KEEP PRODUCTION

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Where small, loose products are used or produced, perfecting the materials handling system is often the most important factor in attaining lower production cost. An essential part of the system is properly designed, light and strong metal shop containers for the pickup, collection, and conveyance of materials to and from machines, finishing, assembly, packaging and storage.

Cleveland shop boxes, barrels, cans, pans and pails are usually custom-

made, because the small extra first cost is trifling compared with the advantages gained, year in and year out, by having containers of exactly the right size, shape and design to fit individual needs and special handling requirements.

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SHOP EQUIPMENT DIVISION

Cleveland Wire Spring Co.

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Cleveland
STEEL SHOP EQUIPMENT
 STOCK STYLES FOR GENERAL UTILITY
BUILT-TO-ORDER to meet special requirements



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Day-in and day-out for fifteen years, this tough BWH Transmission Belt has powered a Beater drive in one of America's great paper mills.

Made by the famous Rotocure process of continuous vulcanization — which eliminates potential trouble spots and increases operating life — this belt proved it could take it . . . under high stress . . . difficult operating conditions . . . and on peak load starting.

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HAVE YOU A JOB WHERE STAMINA COUNTS?
Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor, or write to BWH direct.

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

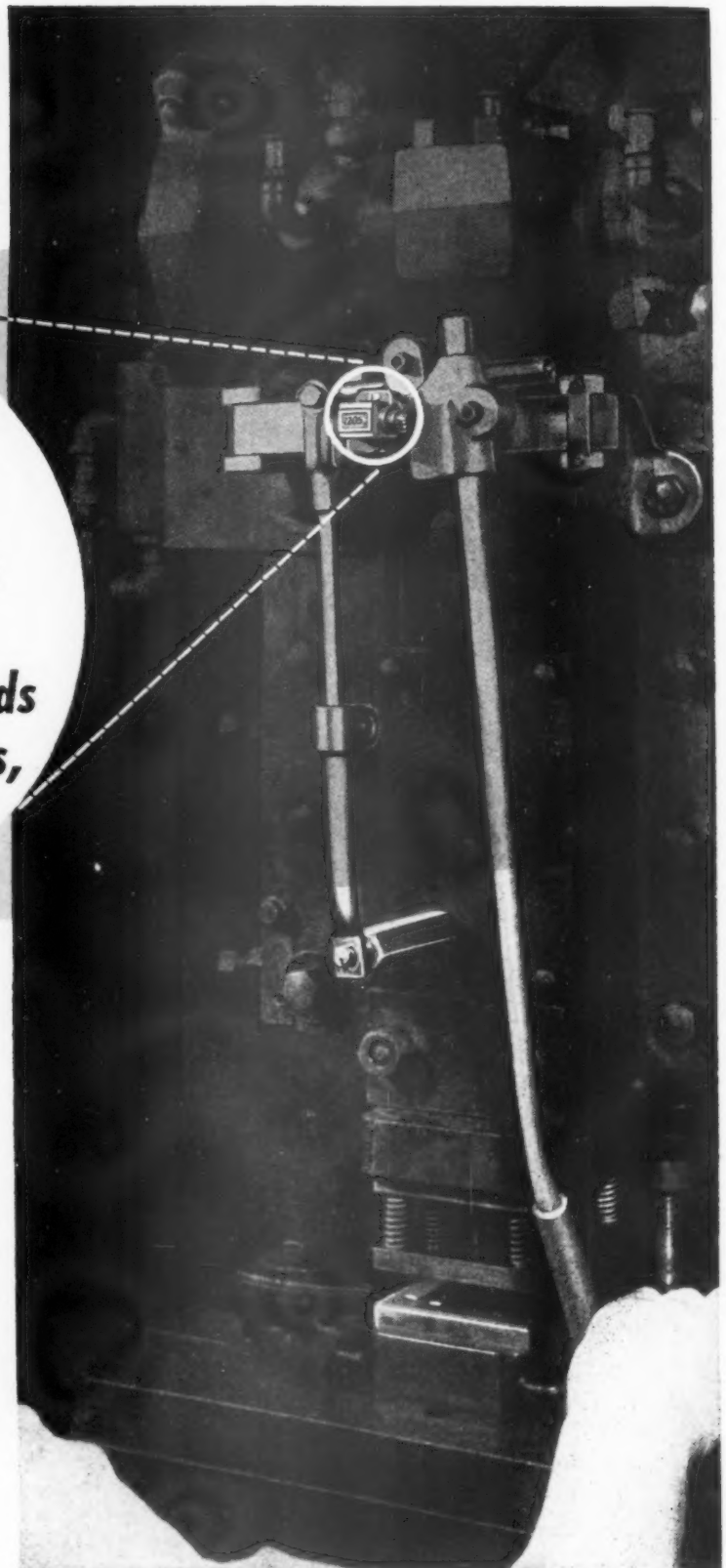
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How VEEDER-ROOT COUNTROL

**helps to
Safeguard Workers' Hands
...and their Work-Records,
too**

This double-duty guard moves operator's hands out of the danger zone on a punch press on each stroke . . . long before the dies close. And as the guard-arm operates, it registers the stroke on a Veeder-Root Counting Device . . . providing an accurate piecework record . . . but only if the guard mechanism is in place *and in use*. So it not only prevents lost-time from accidents . . . it also gives both employee and employer an accurate and up-to-the-minute record of die-stampings.

This is another instance of the infinite ways in which manufacturers and users of production machines can use Veeder-Root Countrol to increase the usefulness of their machines. You, too, can build them into your products as integral parts . . . or attach them to the production machines now in use in your plant . . . quickly, easily, and at negligible cost. In fact, any machine or process can be modernized with Veeder-Root Counting Devices of the right type . . . to count any unit of production or motion, either mechanically or electrically. See how Veeder-Root Engineers can profit *you*, by adapting Veeder-Root Countrol to *your* machines or products. Write.



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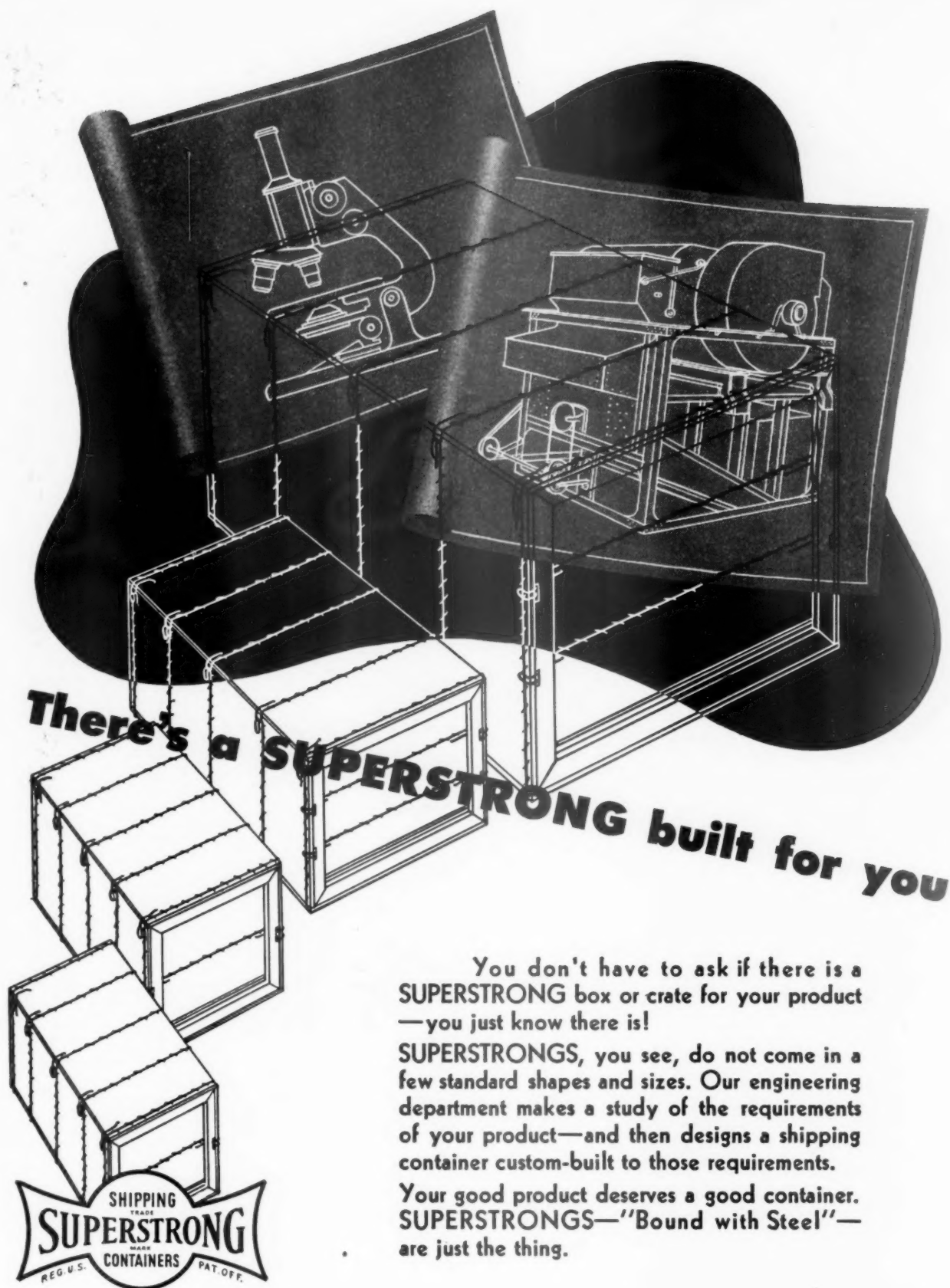
The Counting House of Industry



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HARTFORD 2, CONNECTICUT

*In Canada: Veeder-Root of Canada, Ltd., Montreal
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You don't have to ask if there is a SUPERSTRONG box or crate for your product—you just know there is!

SUPERSTRONGS, you see, do not come in a few standard shapes and sizes. Our engineering department makes a study of the requirements of your product—and then designs a shipping container custom-built to those requirements.

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COMMON SENSE
ASSEMBLY
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Saves 11 Troublesome Tapping Operations

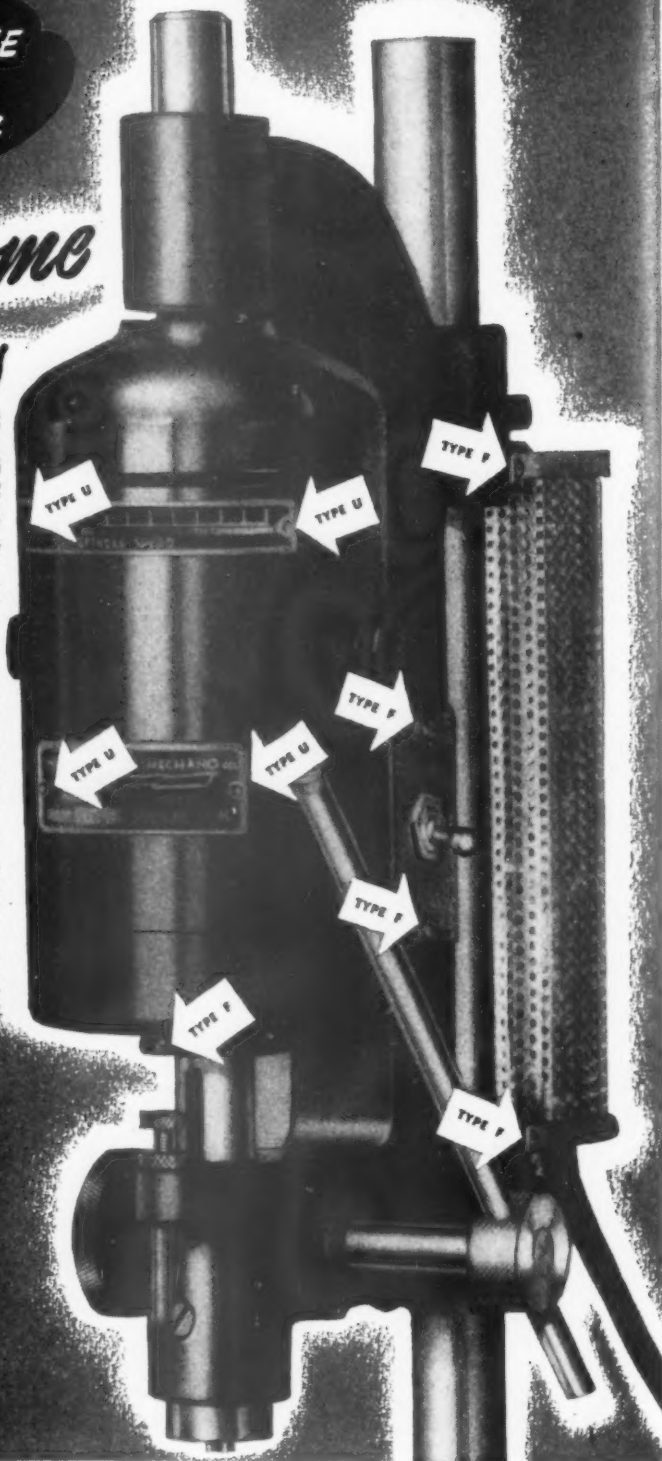
Why make fastenings the hard, higher cost way when you can cut assembly time and get stronger fastenings with P-K Self-tapping Screws? Like Electro-Mechano Company of Milwaukee, for instance. Eleven tapping operations eliminated in assembly of their High-Speed Precision Drill Press, some of them at difficult angles. Losses from parts spoilage and broken taps ended. That's common sense assembly engineering!

It's just good sense to take a long, thoughtful look at your present fastenings and fastening methods. If P-K Screws can be used in your product, they're sure to make a better assembly, at real saving. In 7 out of 10 assemblies submitted to us, P-K Screws permit improvement in strength, and work-hour savings up to 50%.



Ask a P-K Assembly Engineer to look over your assembly and see if it's one of the lucky seven. Or, mail assembly details to us for recommendations. Either way, it's a sensible first step toward making the savings you're missing. Parker-Kalon Corp., 208 Varick St., New York 14.

Sold Only Through Accredited Distributors



Four P-K Type "U" Screws, fasten the name and speed gauge plates. Type "F" Screws fasten the resistor and condenser casing to the motor bracket, eliminate tricky tapping at an angle. Another, below the motor housing, acts as a hardened depth stop. Two others fasten the switch plate.



TYPE
"A"



TYPE
"Z"



HEX
HEAD

PARKER-KALON

P-K



TYPE
"F"



TYPE
"U"



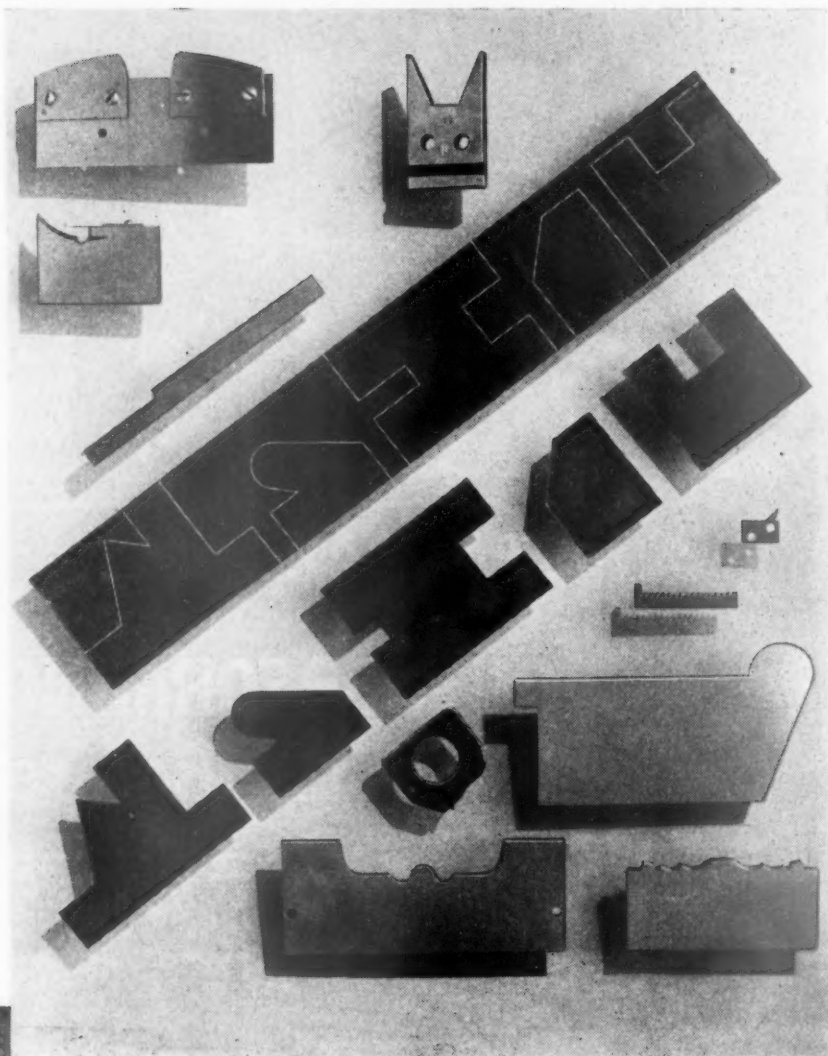
TYPE "Z"
PHILLIPS

SELF-TAPPING SCREWS

A FASTENING FOR EVERY METAL AND PLASTIC ASSEMBLY

FLATTEN YOUR COSTS

ON
SMALL
TOOLS
AND PARTS



...MAKE YOUR OWN
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Save the time and money now wasted in grinding ordinary mill stock to size. Standardize on *ready-to-use* Simonds "Red Streak" Flat Ground Stock for making your own punches, dies, gages, jigs, fixtures, templates, stamps, shims, machine parts and other small items.

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.001" ... is squared on both edges and ends ... and has smooth surfaces for accurate layout work. What's more, it's uniformly annealed for easy machining and proper hardening. And each piece is packed in its own protective envelope, plainly marked with size and heat-treating instructions. 121 sizes available.

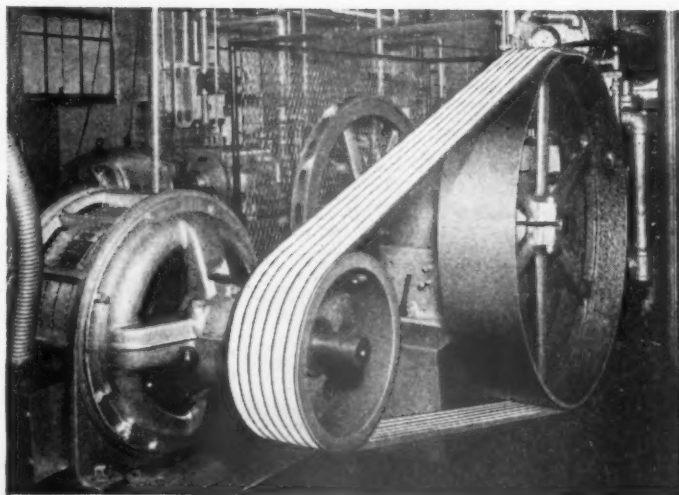
Order from your Industrial Supply Distributor, or from the nearest Simonds office, listed below, at the left.

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Cal.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

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A welding rod or flux that's good for one job may be "bad medicine" for the next. No single product can meet every requirement—true of any metal, ferrous or nonferrous. That's why it's wise to consult an expert whenever you have an unfamiliar joining problem.

Alcoa has developed the welding alloys and fluxes you'll need for any aluminum joining job. Fabricating procedures have been worked out to give most dependable results. Data on these materials and methods are yours for the asking.

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ALUMINUM COMPANY OF AMERICA,
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For best results, specify these ALCOA products

Alcoa 2S—commercially pure

Alcoa 43S—5% silicon

In coils or in 36-inch straight lengths

SIZE DIAMETER	FEET PER POUND	SIZE DIAMETER	FEET PER POUND
$\frac{1}{16}$	270	$\frac{5}{32}$	45
$\frac{3}{32}$	120	$\frac{3}{16}$	30
$\frac{1}{8}$	70	$\frac{1}{4}$	17

Alcoa 2S or 43S core wire

In 14-inch lengths—2 pound heat sealed packages

Size	$\frac{1}{8}$ " Dia.	$\frac{5}{32}$ " Dia.	$\frac{3}{16}$ " Dia.	$\frac{1}{4}$ " Dia.
Rods per lb.	32	23	17	10

8 oz. jar 1 lb. jar 5 lb. jar 50 lb. drum 150 lb. drum

ALCOA ALUMINUM



30-40% Longer Life in Pratt & Whitney Taps!

... proved by Thompson Aircraft Products Company of Cleveland, Ohio

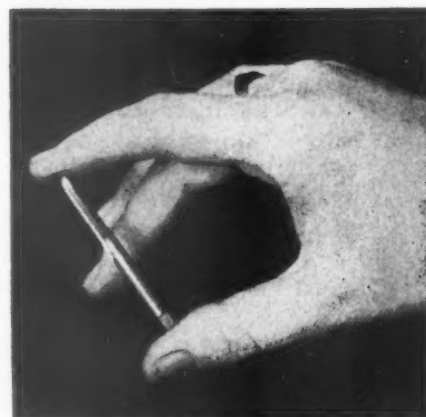


Lower cost per tapped hole, trouble-free production, and 30-40% longer life with P&W taps than in any others they have used, according to the Thompson Company.

30 blind holes .390" deep in these hydraulic couplings are being tapped to a class 3 fit at the Thompson Aircraft Products Company. Tap used is a Pratt & Whitney 3-Fluted 8-32 NC Plug Machine Screw Tap of High Speed Steel with Precision Ground Thread.

There is one unassailable proof of a product's quality — that is its record in actual use.

It is an unswerving Pratt & Whitney policy to spare no expense or effort to *guarantee* that every single tap shipped to a customer is the finest that can be made. Expert designing, highest grade steel, scientific heat treatment, and precision craftsmanship — all combine to give Pratt & Whitney taps their well-deserved record of top production efficiency. A listing of our complete tap sizes and styles will be supplied upon request.



PRATT & WHITNEY

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WEST HARTFORD 1, CONNECTICUT



Purchasing Previews



A Washington Report for Purchasing Agents

MAY 1, 1946

CONSTRUCTION PROGRAM INCREASES SHORTAGES . . .

Government is leaning more and more toward use of expedients in seeking to stabilize the reconversion period. Reason is political, and result is uncertainty.

Example of expedients is the housing program, alleged by the Producers' Council to have been hatched by Economic Stabilizer, Chester Bowles.

It is the pronounced view that some concrete gesture must be made toward the veteran, and housing is being used as a spearhead. The political aspects of this maneuver become apparent when it is considered that the wartime construction controls were dropped by the then WPA Chairman J. A. Krug, only to be re-applied with greater stringency under the promptings of Stabilizer Bowles.

The need for construction of housing is unquestioned, but the uncertainty engendered by the current program adds to the difficulties of the construction industry. Numerous estimates of labor needs and material needs have been made by Government housing experts—but these estimates have been somewhat specious. Example is the announcement that to accomplish the Wyatt housing program, 50,000 additional plumbers would have to be trained.

Plumbing union officials questioned these figures, on the premise that the Government did not know what kind of heating would go into the Wyatt house—and did not know how many plumbers there are currently available. In short, the estimate of 50,000 was discredited and withdrawn by the Government.

Estimates on material needs for the veterans' housing program hinge on uncertainties, as there is no way of knowing how many houses will be of brick, lumber, or substitutes.

Net result is a question mark for purchasing agents, who find it difficult to fathom the future supply trends in materials.

PRICE DIFFICULTIES RETARD PRODUCTION . . .

Certain material shortages, however, are apparent. Cast iron and gray iron foundry products will continue extremely tight—due to the need for cast iron plumbing items in the housing program.

Lumber will be definitely in scarce supply, especially construction grades. This will force purchasing agents to contact alternate sources, small mills, etc. Scarcity of lumber will mean a larger demand for substitute materials for cabinets, furniture. This, in turn, will create a greater demand for plastics, metal, and other substitutes.

Large number of housing units planned will require an unprecedented number of household durable goods—mechanical refrigerators, ranges, sweepers. This will create re-

quirements for castings, fractional horsepower motors, bearings—all of which are, and will continue to be, in short supply.

While this seeming limitless demand would ordinarily spur manufacturers to great production, reverse has been true. Industries producing specialty construction castings have been operating at as low as 10 and 20 percent of capacity.

The impasse has been over prices, and OPA has sought to patch up a price program that will make production more attractive. However, the program has been one of expediency rather than predetermined.

SURPLUS DISPOSAL DECENTRALIZED . . .

Surplus property disposal program is another case of a succession of expedients.

Most recent change has been initiated by War Assets Administration head Lieut. Gen. Edmund Gregory. Facts are that surpluses have been stacking up, and disposal has been lagging.

One reason has been the numerous priorities which have been accorded Government, veterans, etc., in purchasing the surpluses. General Gregory proposes to by-pass some of the priorities and to decentralize disposal.

The decentralization approach is doubtless expedient, as is the general idea that in sales of a surplus commodity a list of priority customers is highly impractical. However, in trying to by-pass the priority issue—which is highly political—General Gregory is likely to find his program badly disjointed by criticism and interference.

No sooner had General Gregory been sworn in as head of War Assets Administration than rumors were current that he would be ousted.

At the same time, General Gregory let it be known that he intended to make his disposal program work. He announced five broad methods of increasing sales, as the bulwark of his decentralization policy. They are:

1. Each of the 33 WAA Regional Directors has broad authority to initiate sales of surplus property up to \$1,000,000 in original cost with only summary approval of Washington. Previously all sales over \$25,000 were referred to Washington.
2. Regional Directors have greater freedom of choice as to the method of sale.
3. All possible surplus property will be sold at fair fixed prices set for different trade levels as near as possible to comparable market prices.
4. Procedures for the allocation of surplus among different trade levels have been simplified.
5. Liberal provisions have been made for effecting leases of surplus property, and for extending loans or credits in surplus sales transactions.

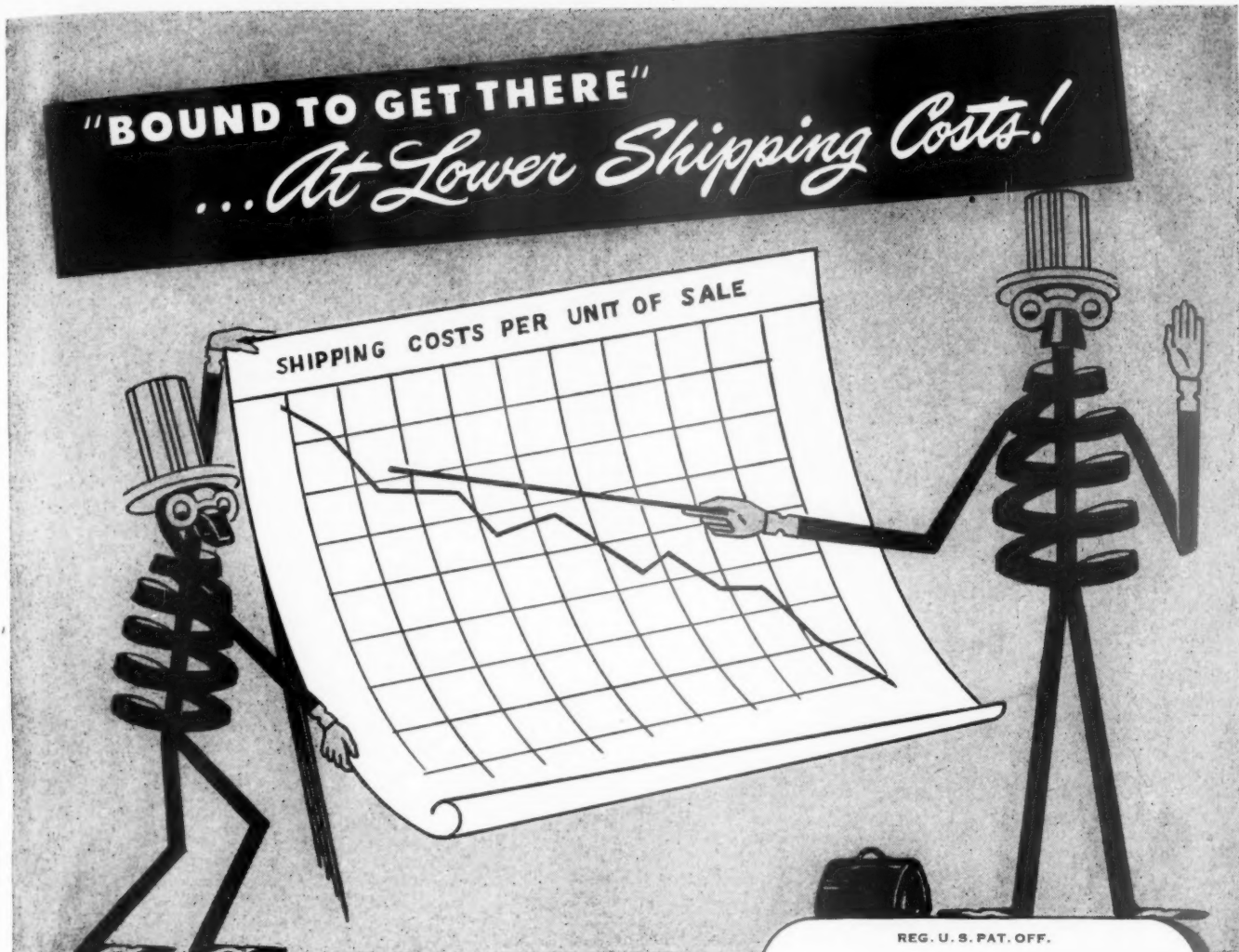
PRICE CONTROL STILL STORM CENTER . . .

Storm center, however, continues to be the issue of price control. OPA is wheeling and dealing in its efforts to get through what it considers to be workable price control legislation.

This policy of concession in order to obtain the extension of legislation means a period of great uncertainty as to prices. Prices have been moving up, and will continue to do so. The question is at what point they will stabilize; also, if they work themselves up too high, when and in what manner a recession will develop.

Most optimistic evaluation of the outlook is that prices will rise until some time this Fall, when competition will gradually bring the increases to a halt. By winter and spring of 1947, a slow downward trend might develop.

A pessimistic outlook is for sharp increases through this year—with an equally sharp break in prices sometime next year.



...WITH *Acme Steelstrap*

The most efficient shipping container is one that has all excess poundage trimmed off and is stronger. Acme Steelstrap builds up strength and makes containers better able to withstand the hazards of transportation.

Acme Steelstrap lowers shipping costs because: (1) original container costs less due to reduced weight of raw material and resultant manufacturers labor, (2) lighter containers mean less dead freight weight and, (3) claims for damage and pilferage are fewer.

Yes, shipping costs go down, profits up, when you use Acme Steelstrap. Investigate now.

ACME STEELSTRAP SCORES UP TO 11-1 SHIPPING SAVINGS

From an authoritative source comes . . . "we have used Acme Steelstrap extensively and found that it cuts overall shipping costs considerably. In labor, lumber; nails, screws and bolts; warehousing and shipping space and weight . . . savings, as high as 11-1, were realized over previous methods."

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for maintenance executives

through the use of

WYCKOFF

quenched and tempered cold finished steel bars



When replacement or repair parts are needed make them from WYCKOFF QUENCHED AND TEMPERED COLD FINISHED BARS. For many parts the cold finished surface will eliminate much machining.

Compared with parts made from mild steel or untreated steel the Quenched and Tempered Cold Finished Bar will yield parts of high strength, good ductility, greater fatigue life and better wear resistance.

Compared with parts made from annealed bars which are subsequently heat treated the QUENCHED AND TEMPERED COLD FINISHED BAR eliminates the heat treating, straightening, and cleaning operations with the consequent bother and loss of time before the part is ready for use.

WYCKOFF QUENCHED AND TEMPERED COLD FINISHED BARS have refined structure, high strength, toughness, high fatigue resistance and good wearing qualities. Their use will reduce down time and maintenance costs.

Wyckoff

STEEL COMPANY

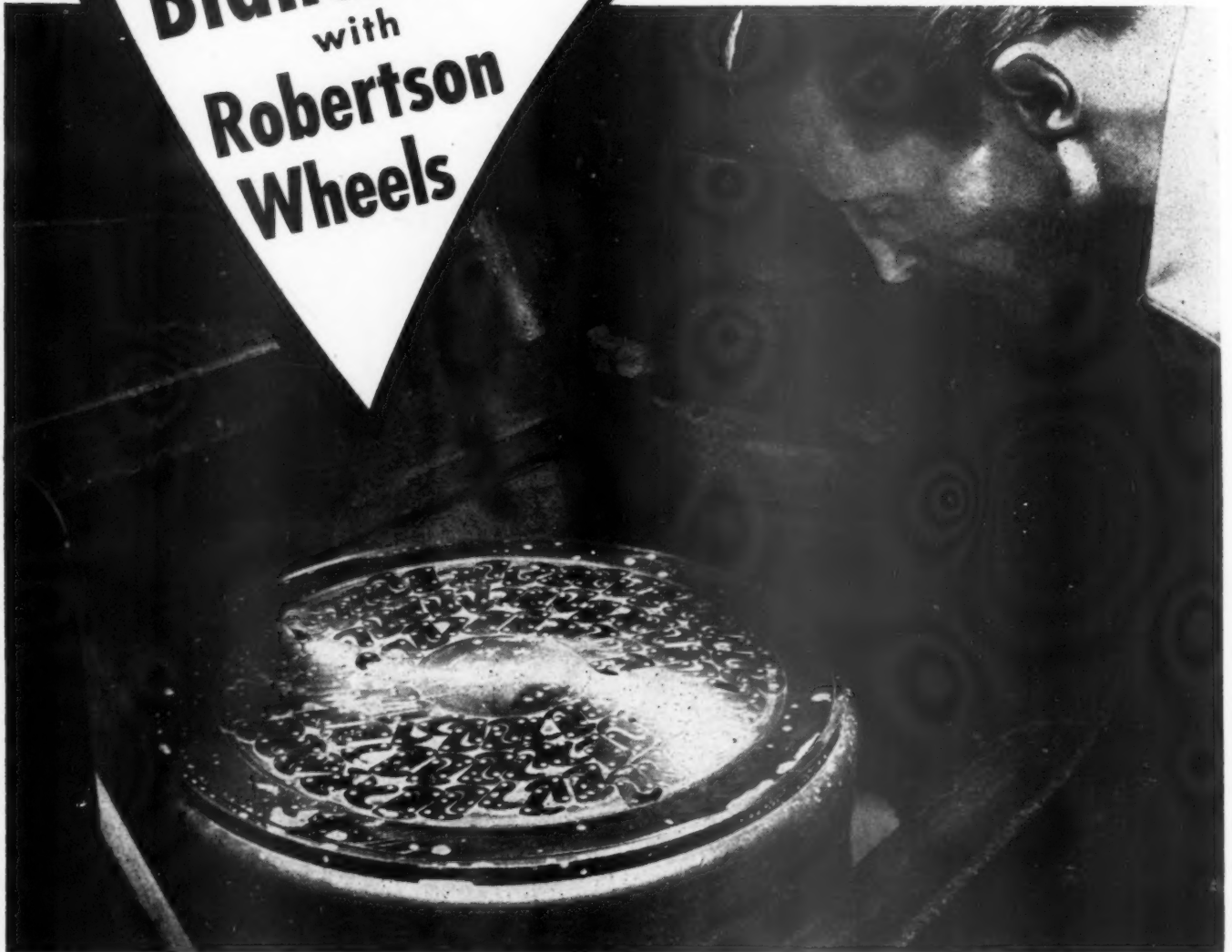
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Ground Shafting—Wide Flats up to 2" x 12"



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Get more work out of your
Blanchards
 with
**Robertson
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Whether you're working on small pieces or on 30" x 30" boiler plate, you'll get better results from your Blanchards if they're equipped with Robertson Cool-Cut Segmental Wheels or Ring Wheels.

These precision-built wheels have proved their ability, time and again, to cut grinding time in half—or better. Because of the special Cool-Cut structure, only a few grains are used at a time, providing an unusual degree of chip clearance. The bond holds the cutting grains to the limit of their effectiveness. This increases the life of the wheel and assures cool cutting on the hardest of metals.

One large company, operating on half-

inch-thick boiler plate thirty inches square and with a ten-inch hole in the center, was taking 45 minutes to remove .050" stock from one side. Ampere reading was 67-75. When they equipped the Blanchard with a Robertson Cool-Cut Segmental Wheel, grinding time was cut to 20 minutes (less than half the previous time). Feed was stepped up 25%. Ampere reading dropped to 45-50.

Results such as these, obtained on difficult boiler plate grinding operations, should suggest to you the advisability of using Robertson Cool-Cut Wheels to solve many of your other difficult grinding problems.

✓ Write for a free copy of the booklet, "How to Buy PRODUCTION-TIME," which tells all about Robertson Cool-Cut Wheels.

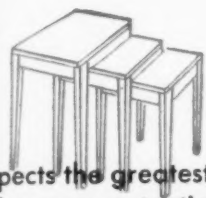


ROBERTSON

MANUFACTURING COMPANY
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Manufacturers of Vitrified-Bonded Grinding Wheels • Mounted Wheels • Segments

the Modern Fastening, of course, for your new line



With about 7,000,000 home-minded "war brides," the furniture market expects the greatest boom in its history. The industry is counting on a potential billion dollar market. But alert furniture makers know that there will be strong competition for every dollar of consumer buying power. That's why they're using every means to give their products extra buy-appeal and to assure dealer goodwill. Old-style wood screws, like many old practices, are being discarded in order to raise efficiency and quality.* Twin-Fast Screws give furniture makers every advantage in speeding production and "clinching" sound construction. Yet this modern fastening costs no more than the old, conventional wood screws. Test Twin-Fast in your own plant. *Just send for samples, today.*

Twin-Fast Screws come in steel or brass with round, flat or oval heads.

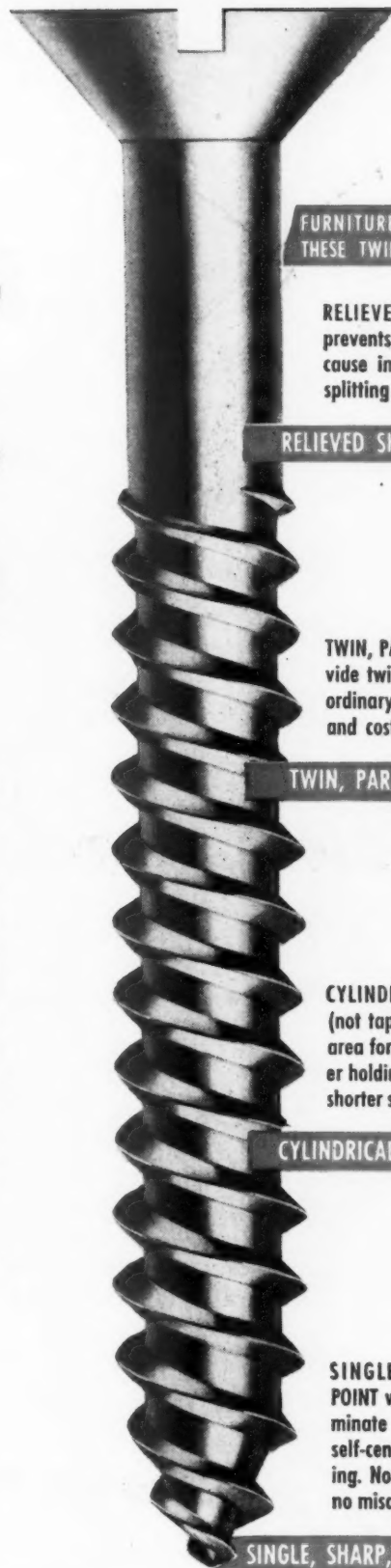
Patents 2,314,390; 2,314,391; 2,373,878;
2,373,948 • Canadian Patents
500,695; 500,696 • Other
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The Blake & Johnson Company makes many thousands of fastening devices in all standard metals.

THE BLAKE & JOHNSON COMPANY (Since 1849)

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TWIN, PARALLEL THREADS pro-
vide twice the thread pitch of
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TWIN, PARALLEL THREADS

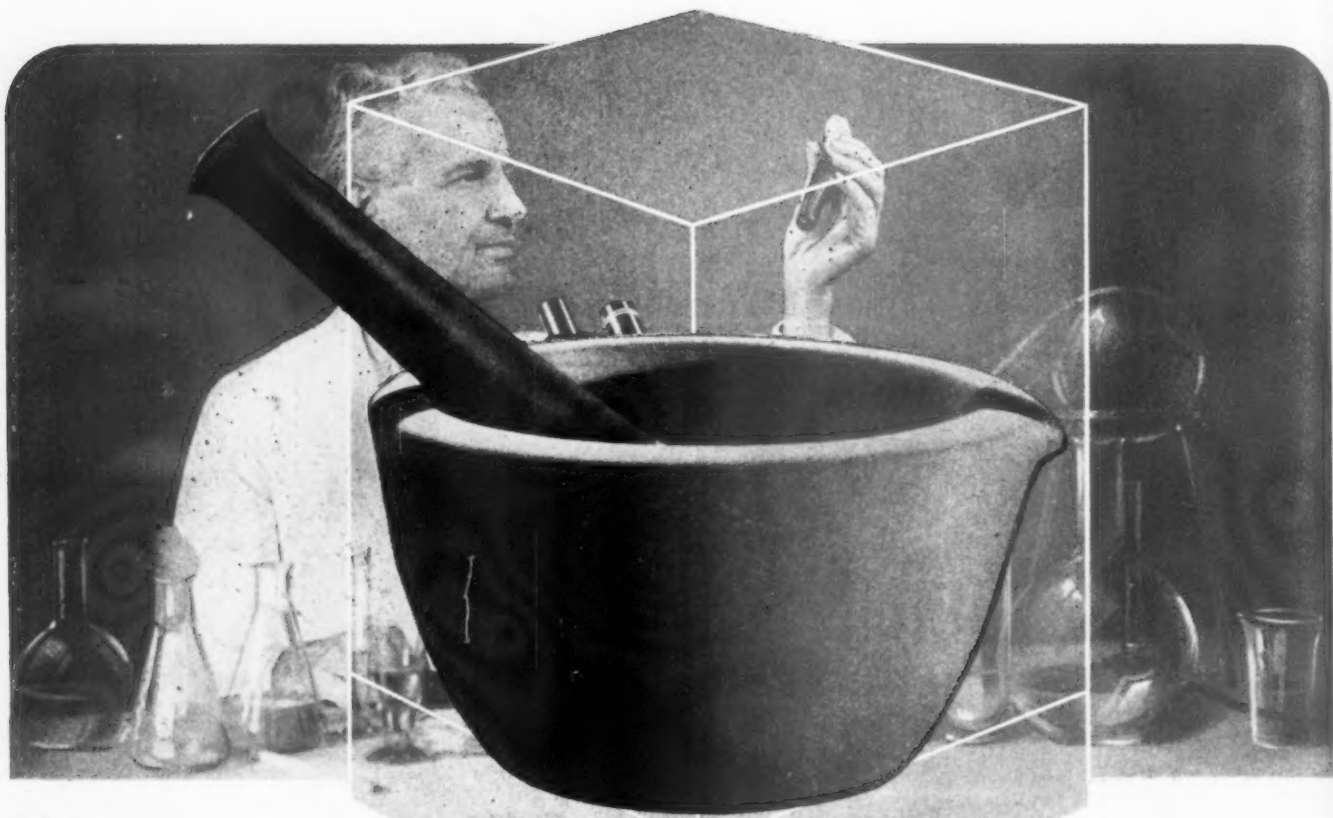
CYLINDRICAL CONSTRUCTION
(not tapered) increases thread
area for tighter seating, great-
er holding power. Often fewer,
shorter screws may be used.

CYLINDRICAL CONSTRUCTION

SINGLE, SHARP, CENTERED
POINT where twin threads ter-
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no misalignment!

SINGLE, SHARP, CENTERED POINT





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In the drug and chemical business these days they are doing a lot of talking about germicides, penicillin, the sulfa drugs, plasma substitutes and amino acid products . . . yes, and from pharmaceuticals to petroleum they are talking about the sales influence of set-up boxes. No other container offers so much in sturdy, long-wearing quality and outright sales appeal.

This billion and a half dollar industry uses more set-up boxes than any other type of container. Set-up boxes are no cure-all for packaging ills but practically every nationally sold drug and chemical uses set-up boxes as the ideal packaging medium. Your product will be more sales minded with a set-up box. Write or call your nearest paper box manufacturer for survey (Dept. 45) "Drug and Chemical Industries".



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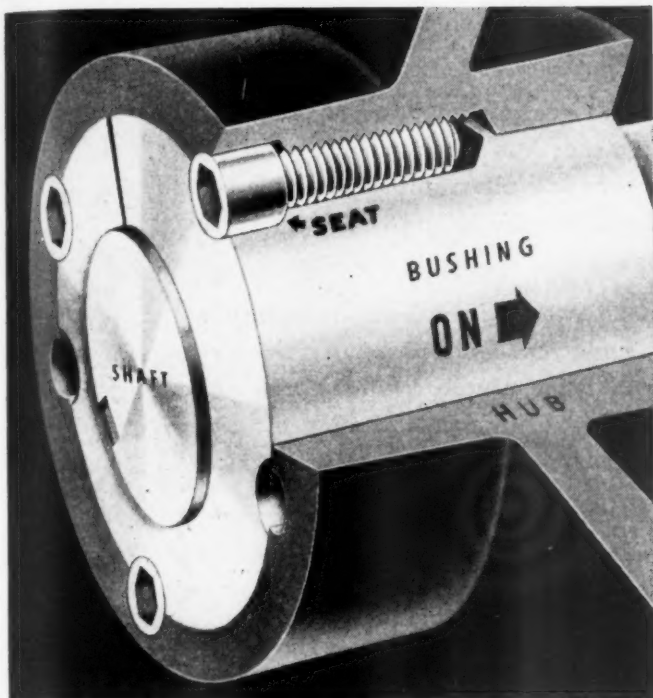
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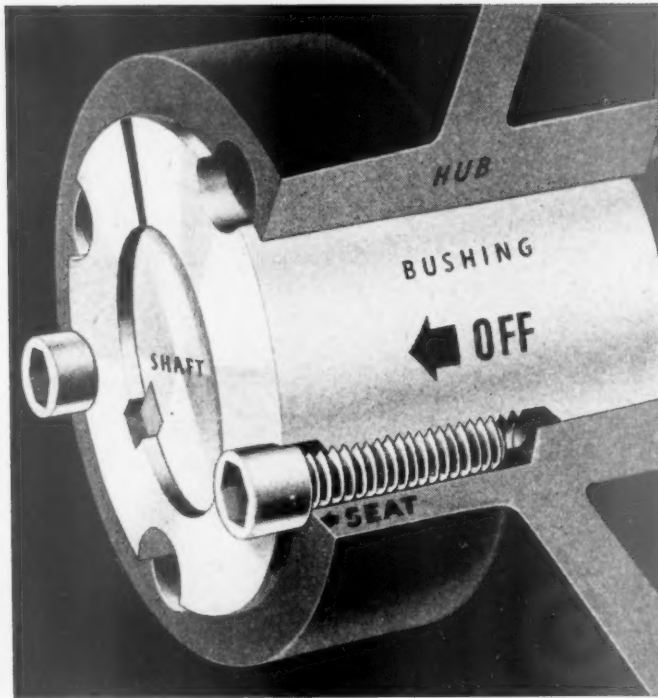


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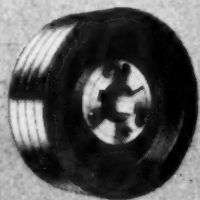
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Note that only the HUB is threaded. Screw-head seats itself against offset in bushing. As the screw is turned, the sheave is drawn up—wedged—with a firmness equivalent to a shrunk-on fit, whether the shaft is standard or normally undersize.



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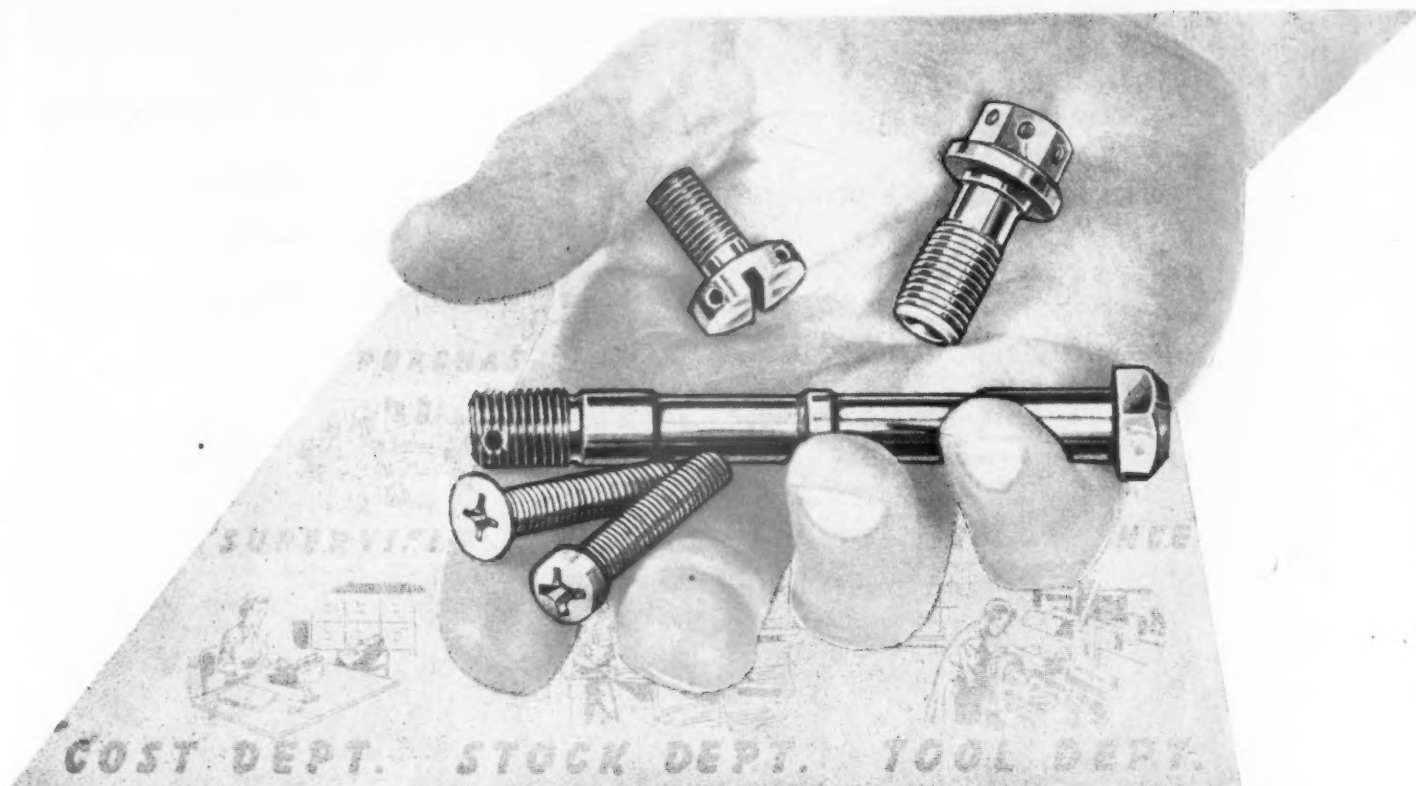
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MAY, 1946

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FACING FACTS

PURCHASING men, from the very nature of their responsibility, are realists. Purchasing men are practical; they expect value from their association membership as they do from any other purchase. Their national association program is devoted to the straightforward objective of enabling them to do the best possible job of procurement under existing conditions. Annually, their convention agenda is centered upon the most vital current theme, seeking to develop the answers to two basic questions: What are the facts? What can we, as buyers, do about them?

So when the theme of the 1946 convention is announced as "Charting our course in inflationary markets" we have the first-hand testimony of these keen observers of business conditions, in close and constant contact with the nation's industrial markets, that inflation is a fact. Despite the vigorous assertions and denials that emanate from Washington, the cagey "estimate" of our economic health, and the carefully worded official statements that becloud rather than clarify the situation, the men who have to buy and sell under today's conditions are convinced that the threat has become a reality. Inflation is here.

And we have the further assurance that the Chicago conference, facing the facts and seeking a practical means of coping with them, will write the most progressive program of policy and action that has yet been offered to deal with the situation. For it is only by facing the facts that we can come out with the right answers.

The eyes of the business world will be upon Chicago, May 27th to 29th. The course of buying, and of business, through this critical period will be charted there.

Stuart F. Neimark



Had the discoverer of CHLORINE, Karl Wilhelm Scheele, envisioned only a fragment of its importance to mankind, such a sign might well have hung above his modest eighteenth century Swedish pharmacy. But "Dephlogisticated Marine Acid Air" remained a laboratory curiosity for years, its identity as Chlorine and its remarkable potentials unknown.

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and germicidal properties, more recently Chlorine has also become invaluable to synthetic organic chemistry . . . to the expanding manufacture of such products as plastics, high-test gasoline, delicate dyes, medicines, synthetic rubbers, special solvents and fine chemicals.

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HIGHLIGHTS

A brief summary of outstanding features
of timely interest and importance in this
issue, to conserve the time of busy readers



Highlight of the business year for several thousand purchasing agents is the **N. A. P. A. Convention**, a forum devoted to the presentation and discussion of the timely topics uppermost in every buyer's mind. The 1946 meeting is scheduled at Chicago, May 27-29. It comes at a particularly critical time in business history—a time of readjustment after war, under economic conditions fraught with the perils of world-wide inflation, and introducing the unprecedented advances in the wartime technology of materials and methods for general application in industry. Turn to page 89 for a preview of the program and exhibits.

The old procurement problem of **"Make or Buy"** has new significance under present conditions. In a stimulating article on page 98, E. L. Cady points out that the practical answer is to be found in an analysis of relative costs. He suggests a policy of competition under which both purchasing and production departments must prove their performance, leading to coordinated decisions to the benefit of company profits.

Purchasing's responsibility in the national interest was never greater than it is today. What that responsibility is, and how purchasing policies and performance can contribute to smooth transition and permanently sound industrial conditions, are told in **"A Tribute to Purchasing Agents"** by the nation's Director of Reconversion and Stabilization. Turn to page 123 for his statement.



Two interesting **Purchasing Systems** are presented in this issue, each directed to a particular phase of importance in their respective company operations. On page 112, F. M. Burt tells of the close coordination with production scheduling, and on page 138, L. E. Covey shows how considerations of quality and cost are controlled. Both articles are complete with forms.

The thought has frequently been expressed that buyers would be better equipped for their jobs if they had the advantage of an apprenticeship in sales work, so that they could visualize problems of supply as they appear

from the other side of the desk. W. M. Kerrick, able purchasing executive, acquired his first business experience in just that way. Consequently his comments on the topic **"If I Were a Salesman"** have far more than academic significance. Turn to page 129.

Import Markets are once more a factor in purchasing as the whole wide world again becomes a potential source of supply for the industrial buyer. For anyone who is not accustomed to dealing in the foreign markets, there are unfamiliar details to be handled, pitfalls to be avoided, and important sources of information and assistance available for the asking. Practical advice on these basic considerations is offered on page 118 by a man whose long experience in the import field, as well as his present position, eminently qualifies him to discuss the topic.



Guarantees in Contracts are intended to protect the interests of the buyer, but the force of these guarantees may be lost unless the buyer knows the legal conditions surrounding the agreement. Leo Parker's article on page 141 recounts some recent court decisions clarifying this important phase of purchasing. Another controversial point, covering the interpretation of a common term in transportation charges, is explained in the article by Alfred Lomax, on page 126.

Utility Services—power, light and communications—are generally available from only one source, and are sold at uniform rates prescribed by regulatory commissions. Nevertheless they present a real purchasing opportunity in selecting the right type of service and equipment. The story on page 102 tells how.

Don't overlook these monthly departmental features compiled especially for purchasing men—the **Washington Letter** on page 69, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of **Know-How Information**, that is yours for the asking, appearing on page 14; and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer (page 146), providing a quick and convenient means of keeping up to date on recent developments.

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ON TO CHICAGO!

National Association of Purchasing Agents will hold its 31st Annual Convention at Chicago, May 27, 28 and 29



CHARLES L. SHELDON

President of the National Association
of Purchasing Agents

Purchasing Agent, Hood Rubber Company,
Division of the B. F. Goodrich Company
Watertown, Mass.

Mr. Sheldon will preside at the largest gathering of purchasing agents in the world's industrial history

THE Thirty-First Annual International Convention and Informa-Show of the National Association Purchasing Agents will be held at the Stevens Hotel, Chicago, on May 27, 28, and 29. The return to a "normal" and complete convention program after three years of severely serious and streamlined wartime purchasing conferences in New York City and last year's skeleton meeting in Chicago, made necessary by restricted travel regulations, has been hailed with enthusiasm, and all signs point to a record gathering.

Chicago is a popular choice for the convention city. Centrally located, it is convenient to the large body of the membership in the middle and far west. It is the home of the largest local purchasing organization among the more than seventy such groups that make up the National Association. And it has an enviable record of staging the highly successful conventions of 1920, 1930, and 1941.

Basically, of course, the intense interest in this year's convention has its foundation in the vital problems of the present business situation and the unprecedented responsibility of purchasing men in meeting these problems and helping to build a sound postwar industrial structure. The decisions and policies adopted now will go far toward shaping a permanent business pattern. The war emergency, urgent as it was, and laden with all sorts of special problems, was recognized as a temporary situation. Today the problems are no less serious, and they have added significance in that they concern a more permanent and deeply rooted problem, which purchasing must help to solve. The testimony of governmental and economic leaders, as well as far-sighted management executives, is unanimous in placing upon purchasing men a large share of the responsi-

bility for steering the nation through the difficult period of readjustment and setting the course for healthy economic progress during the years ahead. This is the theme of a convention program that stresses both the practical workaday problems of the moment and the long range constructive view.

Special significance also attaches to the resumption of the Informa-

tion came necessary to set a ceiling on attendance at specific functions and for the convention as a whole. These limits are: 2,500 for the general sessions, 1,500 for the banquet, and 1,200 for the Early Birds Dinner, which will be held at the nearby Congress Hotel on Sunday evening, preceding the formal opening of the convention. Hotel rooms, once the Association allocation of space was

will be sponsored and conducted by the Women's Division of the Chicago Association.

Convention Program

The general convention program has been built around the theme of "Charting Our Course in Inflationary Markets", representing the consensus of purchasing men who contributed their suggestions and recommendations for subjects most per-



The N. A. P. A. Convention Committee

Roy F. Stiles, Chairman; W. F. Avery, and Leslie E. J. Stonehouse



John P. Sanger
General Program Chairman

Show exhibit after a temporary lapse due to wartime conditions. Accelerated technical progress that has been applied to wartime needs is now being adapted to the products of peacetime use and manufacture. New materials, new methods, and new equipment are not only available to the buyer; they are essential in keeping pace with the fast-moving world in which all business will be called upon to buy and sell and compete. Never were the educational values of this exhibit so rich and so essential as this year. A preview of exhibitors' plans indicates that supplier industries are keenly aware of this, and the displays will be exceptionally informative and interesting.

Other convention features that will be revived this year are the series of plant visits to representative manufacturing organizations in the Chicago industrial area, and the lighter side of the convention program, including the N.A.P.A. golf tournament, which will be staged on Wednesday afternoon.

Ceilings and Lead-Time in Registration

Advance registrations have reached an all-time high, reflecting both the importance of the occasion and the increased membership of N.A.P.A. It became apparent very early in the convention planning that this year's meeting would tax the capacity of even Chicago's splendid facilities for hotel accommodations and meeting space. Borrowing the techniques of wartime control, it be-

exhausted, became strictly a problem for the individual.

Purchasing men, too, wise in the technique of lead-time in war procurement, have found that the same principle applies with equal force to convention registration. The Early Birds dinner was booked to capacity in March, the banquet early in April, and scores of requests for such tickets were turned back to tardy registrants. At this writing, registrations for the convention sessions proper are still being accepted, but the roster is rapidly being filled. Immediate action is necessary if you want to be assured of admission.

For the Ladies

A program of special events for the ladies has been arranged, including luncheon, sight-seeing and shopping tours, so that while the husbands are busy at meetings their wives may enjoy the features that have been planned for their entertainment.

And making its first appearance on the agenda of an N.A.P.A. convention is a special session for women purchasing agents, scheduled for Monday evening. Women in purchasing constitute an active and growing factor in Association work as in industry. Many of the local groups have women in their membership, and Women's Divisions have been organized at Chicago, Seattle, Memphis, and Washington. The convention session recognizes the special interests and problems affecting these groups. It

will be a most important and interesting one at this time. This theme will be developed in four general sessions, each devoted to a particular phase.

Monday Morning, May 27: "Conditions Purchasing Agents Face in the Year Ahead."

Buying Conditions We Will Face in the Year Ahead.

Government Policies for the Year Ahead.

Management's Problems during the Year Ahead as They Affect Purchasing.

Monday Afternoon, May 27: "Back to Fundamentals."

Successful Buying Policies in a Sellers' Market.

Material Management Today.

Tuesday Morning, May 28: "Getting Production Rolling."

Industry's Steel Needs.

Industry's Lumber Needs.

Industry's New Construction Needs.

Industry's Import Needs.

Industry's Agricultural Needs.

Labor—Its Influence on Production and Costs.

Wednesday Morning, May 29: "Some Special Opportunities."

Peacetime Use of War Developments.

Surplus Materials Availability.

Purchasing Personnel—Finding and Training It.

Group Meetings

An important part of every N.A.P.A. convention is the smaller and more intimate meetings conducted by the National Committees and

Groups, ities and special engaged try. A ings will lumber, metals, public u stitution

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banks a others.

The has had resultfu portant gram i being d ing on Associ of suc grams those s in Chic to be s This w discuss ods, at the con outlined

Tues to these opport and to rent se will als open s meeting session The dricks evening

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Groups, devoted to specific commodities and their markets, and to the special problems common to those engaged in particular lines of industry. A wide variety of such meetings will be available, covering fuels, lumber, iron and steel, non-ferrous metals, shipping containers, paper; public utilities, governmental and institutional buyers, food industries,

W. F. Avery of Cleveland, Vice President for District No. 6; and Leslie E. J. Stonehouse of Bay City, Vice President for District No. 4.

In direct charge is a committee chosen from the Chicago Association. This committee is organized as follows:

General Chairman: Roy F. Stiles of Stewart Warner Corporation.



Three members of Chicago Convention Committee: Arthur G. Pearson, Co-Chairman; Carl L. Otremba, Vice Chairman; and L. R. Seen, Secretary and Purchasing Agent. Mr. Seen also is member of Registration Committee.

banks and insurance companies, and others.

The Education Committee, which has had an exceptionally active and resultful year, will also hold an important session. The tentative program includes a review of what is being done for education in purchasing on both the national and local Association levels. Three examples of successful local education programs will be presented in detail—those sponsored by the Associations in Chicago and Milwaukee, and one to be selected from a smaller group. This will be followed by an open discussion of objectives and methods, at which the general policy for the coming year will be clarified and outlined.

Tuesday afternoon will be devoted to these group meetings, but for the opportunity of further discussion and to avoid the conflict of concurrent sessions several of the groups will also take advantage of the few open spots in the crowded schedule, meeting for breakfast and luncheon sessions or on Monday evening.

The annual meeting of the Hendricks Club is scheduled for Monday evening.

Convention Committee

A Convention Committee from the National Executive Committee is responsible for the overall planning. This committee is comprised of Roy F. Stiles of Chicago, Vice President for District No. 3 (*Chairman*);

Co-Chairmen: Arthur G. Pearson of National Broadcasting Company and Henry C. Bauer of Revere Copper and Brass, Inc.

Vice-Chairmen: Carl L. Otremba of Montgomery Ward & Company and William A. Macnider of Hills-McCanna Company.

Treasurer: Harry H. Wise of Scovill Manufacturing Company.

Secretary and Purchasing Agent: L. R. Seen of Borg & Beck Division, Borg Warner Corporation

Program: John P. Sanger of United States Gypsum Company.

Entertainment: Roy O. Carlson of Automatic Spring Coiling Company.

Entertainment (Ladies): Ray W. Morrill of Bowman Dairy Company.

Golf: Joseph F. Franks of The William D. Gibson Company.

Plant Visitation: Walter B. Burnett of Imperial Brass Manufacturing Company.

Press: Walter J. Auburn of The Gerrard Steel Strapping Company.

Publicity: Walter Armstrong of American National Bank & Trust Company.

Reception: Carl G. Schreyer of Bell & Howell Company.

Registration: L. R. Seen and Harry H. Wise.

Service: R. H. Young of Revere Electric Company

Ushers: Arthur F. Dallia of Just-rite Manufacturing Company.

Each of these chairmen is assisted by an active and capable staff of Chicago Association members, who for many weeks past have been devoting themselves to the goal of making this biggest of all N.A.P.A. gatherings also the best and most smoothly handled of such occasions.

PURCHASING at the Convention

PURCHASING Magazine welcomes the convention opportunity of meeting its readers, and of extending its service to make your visit to Chicago more enjoyable.

Cooperating with the N.A.P.A. convention committee, PURCHASING will maintain an information center in the lobby at the entrance to the Exhibition Hall, where the official registration desk will also be located. This service center will feature a large registration board where you can see at a glance who is present at the convention and the hotel at which each registrant is staying. This will be cross-indexed by company names in a card file, and supplemented by day-to-day mimeographed lists of registrants. Here is the surest way of getting in touch with the men you want to meet.

Local telephone service will be available at our service center and also at our Inform-a-Show exhibit

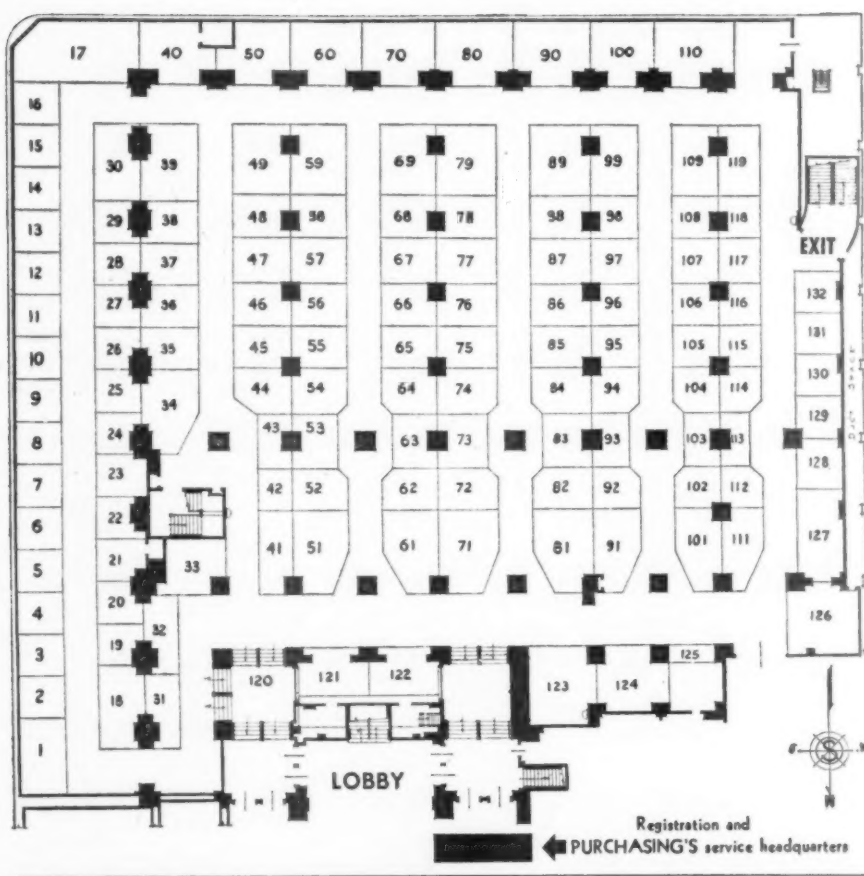
(Booth 71, just inside the entrance). There will be a paging service to locate men in the Inform-a-Show. Comfortable chairs at the booth make this an ideal spot to relax between sessions and to meet your friends.

We've already been asked about those "miniature edition" memo books that have been a regular convention feature for the past several years. Yes, of course they will again be distributed, with a color portrait of President Sheldon on the cover, just as it appears on the cover of this issue. You'll find the memo book a great convenience and a pleasant memento.

PURCHASING will have rooms at the Stevens and at the nearby Congress Hotel. A friendly and informal welcome awaits you there. Our entire staff will be on hand. Come up and see us.

INFORM - A - SHOW DIRECTORY

Product exhibits which will be shown
in connection with the N.A.P.A.
Convention and where to find them



Booth No.	
105-106	Acme Steel Co.
91	Air Reduction Sales Co.
63	The American Crayon Co.
131-132	American Emblem Co. Inc.
114	Atlas Powder Co.
128	Ault & Wiborg Carbon & Ribbon Div.
16	Autopoint Co.
82-92	Barrett-Cravens Co.
119	Berry Bearing Co.
74	Binks Mfg. Co.
129	Bussmann Mfg. Co.
95	A. M. Castle & Co.
85-86	Chase Brass & Copper Co.

Booth No.	
34-35	Chicago Belting Co.
80	Chicago Steel Service Co.
68-69	Cities Service Oil Co.
118	Clark Subscription Agency
36	Clipper Belt Lacer Co.
38-39	Crane Co.
72	A. B. Dick Co.
81	Joseph Dixon Crucible Co.
65	C. B. Dolge Co.
104	Eagle Pencil Co.
78	Ediphone
99	Federated Metals Div., American Smelting & Refining Co.

Booth No.	
84	The Garlock Packing Co.
51	Gaylord Container Corp.
87	Gerrard Steel Strapping Co.
49	The William D. Gibson Co.
47	Graybar Electric Co., Inc.
103	Hilo Varnish Co.
76-77	The Hinde & Dauch Paper Co.
14	Homestead Valve Mfg. Co.
59	Hood Rubber Co.
123	Jenkins Bros.
108	Justrite Mfg. Co.
130	Karel First Aid Supply Co.
75	Kee Lox Mfg. Co.
48	Kimberly-Clark Corp.
64	Lapham Hickey Co.
4	Walter G. Legge Co.
52	A. Leschen & Sons Rope Co.
57	Link-Belt Co.
67	Ludlow-Saylor Wire Co.
127	The Lunkenheimer Co.
33	MacRae's Blue Book Co.
102	Manufacturers Screw Products
44	Marr Duplicator Co.
13	Thom McAn Safety Shoe Div., Melville Shoe Corp.
32	Mystic Waste Co., Inc.
66	National Cylinder Gas Co.
37	National Vulcanized Fibre Co.
3	Oakite Products, Inc.
15	Oliver United Filters, Inc.
45-46	Pittsburgh Coal Co.
11-12	The Frederick Post Co.
71	PURCHASING — Conover-Mast Corp.
93	Reynolds Wire Co.
43	Rochelle's Inc.
83	Royal Metal Mfg. Co.
79	Joseph T. Ryerson & Son
55-66	St. Regis Paper Co.
117	The Sanitary Institute of America
53-54	Shell Oil Co.
126	Signode Steel Strapping Co.
113	Size Control Co.
96-97-98	Skilsaw, Inc.
61	Socony-Vacuum Oil Co.
107	The Standard Register Co.
18	The Stanley Works
42	Sterling Bolt Co.
58	D. A. Stuart Oil Co., Ltd.
88-89	Sylvania Electric Products, Inc.
111	Thomas Publishing Co.
6	Turco Products, Inc.
41	Underwood Elliott Fisher Co.
94	United Precision Products Co.
9	U. S. Sanitary Specialties Corp.
73	Van Cleef Bros.
101	Walworth Co.
62	Benjamin Wolff & Co.
1	The Yale & Towne Mfg. Co.

BUYERS STILL MAKE MARKETS



ONE of the most prized decorations worn by our returning service men is the battle star denoting combat service in the Battle of the Bulge—that critical and furious engagement which turned back the last threat to our victory in Europe. Everyone who had a part in that bitterly contested action, when the fate of our advancing armies hung in the balance, has the satisfaction of knowing that there and then he helped to turn the tide and to shape the ultimate course of the campaign. Without that victory, a great share of our earlier successes would have been set at naught; our subsequent advance would have been seriously delayed; the cost of victory, the toll of life and blood, would have been multiplied many times over. But once that battle had been won, the victory was fast and sure.

Purchasing agents can expect no medals or decorations for their service. Yet in a very real sense they constitute today the front line of defense in the Battle of the Inflationary Bulge, a critical economic engagement affecting every one of us, in which the price line is threatening to give way. If that gap is not closed, and the line held, we may well question the validity of our reconversion advances to date, and look to the future with alarm, for the course of our economic life for many years to come is being shaped in this test. If we lose, the economic loss and human suffering will be beyond calculation. But if we win,

**Problems of purchasing
in inflationary markets,
and the significance of
buying policies in check-
ing present inflation**

By **STUART F. HEINRITZ**

Abstract of an address before the Purchasing Agents Association of New York, April 16, 1946.

we can go on to an era of production and prosperity of correspondingly impressive proportions.

This descriptive parallel and figure of speech is not original with me. They are borrowed literally and directly, from the language of the high command in Washington—from Mr. Bowles and Mr. Truman. To be sure there are some, also in high position, who say that the figure is not an accurate one, that we are experiencing a breakthrough and not a bulge. Whether they are realists or pessimists, time alone will tell. The bulge on the battlefield of France started as a breakthrough, but eventually that turned out to be only one phase of the total action. It is quite possible that we may go through a similar phase on the economic front.

One point on which both schools of thought are in agreement is that the development must be resisted with every means and every bit of

determination at our command. They do not agree as to the means of resistance. Government has sought to do it by edict, in the form of price ceilings, but has seemed to many of us to be undermining its own program by other policies which increase the pressures to the point where they must blow through the roof to find relief. Bernard Baruch has outlined a comprehensive program of which the worst that can be said is that some parts of it are politically impracticable.

Both sides have agreed, either directly or by implication, that inflation is not only a threat; it is here. The statistics are incontrovertible. If there is any merit in Leon Henderson's warning that inflation comes by 5% advances, we have already passed through six to eight stages of the process. We have recognized this in the form of cost-of-living bonuses, in the national policy of a 30% wage increase in key industries, and in general minimum wage legislation. By so doing we have added a permanent foundation of added cost for the higher price structure. And there are few who cling to the theory or the hope that this added cost can be "absorbed" by the fellow who has to meet the payroll.

It is not likely that anyone will blame purchasing agents as a group for raising prices. That accusation is reserved for the reverse of the process; buyers are always held responsible for driving prices down.

HOW TO STOP INFLATION

(Extract from Bernard Baruch's testimony before the House Banking and Currency Committee, March 25, 1946)



Increase production. This is the Law and the Prophets—without it the rest of my suggestions are meaningless. So I say it again: Increase production.

Stop increasing money supply.

Stop decreasing taxes until the budget is balanced.

Stop bunking the public by saying that wage increases can be granted without increase in price levels.

Do not fear to increase prices or wages where necessary to get and stimulate production.

Continue price controls, subject to indicated modifications, for a year. Allow profit but no profiteering.

Avoid favoritism to any particular group.

Take care of those between the millstones—clerks, government employees, pensioners, et al.

Make surpluses of goods in military hands available to compensate for shortages.

Stimulate founding and financing small business.

Take stock before blindly lending—make inventories of our goods, our cash, our credit, before we increase the pressure on these.

Cut government costs, including federal, state, county and city. In time of deflation we should spend; in time of inflation we should save.

Eliminate all strikes or lockouts for a year, but arrange that hardships are guarded against.

Set up a High Court of Commerce—a sort of supreme economic council which can decide questions involved in the above points and related subjects.

Avoid an economic dictatorship. We are still a free society based on the enterprise system. Let us abolish neither without the consent of the people.

And above all, we should keep in mind that the humanities come before the dollars. Our first duty runs to man before business, but we must not forget that sometimes the two are interchangeable.

Yet it cannot be denied that markets at any level are possible only when purchases are made. Black markets could not exist and flourish without buyers. And that principle is implied in the frantic appeals now being made for purchasing agents to hold the price line. Perhaps the obvious answer in the present instance—and quite in line with the technique of the times—would be a buyers' strike. But that is unthinkable in a situation where our prime need is for more production. More production implies more buying, to provide the necessary materials and to provide outlets for the product. Our problem is to keep on buying, and to keep prices down, in a market where every influence is working to send prices still higher.

Purchasing men are not particularly concerned with the question of whether we have a high price or a low price economy, so long as a balance of value is maintained. It is their job to buy wisely under the prevailing conditions, whatever they may be. There is ample evidence in commercial experience that some sort of economic balance and a reasonable measure of prosperity can be achieved at either level. In general, an orderly price advance is regarded as a sign of healthy business. But inflation, which destroys the balance between price and value, is another story.

What Is Inflation?

At the present rate of exchange, one American dollar is equivalent to about 6,500 Chinese dollars; but the ordinary Coolie laborer who formerly earned a few cents a day, is now paid at the rate of \$300 per day. He is just about as well off today, no better and no worse, than he was before the war, except that he has to learn to count in bigger sums. Yet we readily recognize this condition as wild inflation, fantastic and uncontrolled. It poses a very difficult problem in international trade, and it threatens the stability of the central government in that country, because something has happened to the dollar.

Inflation is not merely a matter of price tags, though that is the easiest way to recognize it and to measure its course. Inflation is a violent state of unbalance, a highly artificial relationship between two factors—dollars and goods—one of which is in itself an artificial factor. The currency dollar has little intrinsic value. It is essentially a token and a convenient means of exchange. The bus token which is good for one ride

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MAY

from the station to your home in the suburbs after this meeting is a simple form of currency. The dollar differs from that little metal slug chiefly in that it is more universally negotiable and consequently sets a relative valuation on all the things we can buy with it—goods, and bus rides and human services.

Since a change in the price tag does not alter the essential nature or intrinsic value of these goods and services, it is evident that when inflation comes it is the value of the dollar which has declined. That is unfortunate for the person whose assets are in the form of a fixed number of dollars. Up to a certain point it is an advantage to the debtor—like a government—which pays off its obligations in dollars of less value, up to the point where the value becomes so negligible that people lose confidence in it and in the government behind it. We are a long way from reaching that point in this country, but the tendency is one to cause concern.

The Resistance Movement

Purchasing agents are in the business of exchanging dollars for goods and services. Consequently they are keenly interested in maintaining the value of the dollar, so far as is in their power. Their managements also, however much they welcome the increased number of dollars they get for their products, also expect this from their purchasing men. They realize that incoming dollars are of no use except as they are spent again, and in the broad view a currency of high and stable value represents the most desirable condition.

Purchasing men are not responsible for the basic conditions that determine price levels or currency values. These are matters of broader policy determination than lies within their jurisdiction or responsibility, and sometimes these matters get out of hand. That is a problem of the high command, and the purchasing agent, like a good soldier, has to take things as he finds them and slogs along in his persistent search for value in the day-to-day transactions that make up his purchasing program.

But now that the order of the day is no longer "Avoid inflation," but "Stop inflation", these individual transactions take on a greater significance. The purchasing agent today is more in the position of the resistance forces which held the line while the high command was formulating its grand strategy and bringing up reinforcements. His success

in that role may well turn the tide.

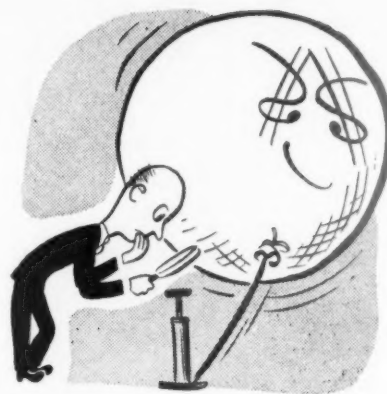
Stewart Alsop in his recent best seller "Sub Rosa", the thrilling story of the Office of Strategic Services and its collaboration with the resistance forces in occupied territories, tells of the hit and run tactics of guerilla warfare. Whenever the objective of the moment had been attained, or the going got too tough, the leader of the maquisards would give the signal "Every man for himself". These forces were phenomenally successful. Always fighting against heavy odds, they were always ready to reassemble for another stand, and they held large areas for prolonged periods against overwhelmingly superior forces.

The author also reports a lecture on "Withdrawal", given by an English officer who had been through Dunkirk. He had high praise for one battalion commander in that action, who kept his unit together as a disciplined fighting body and succeeded in getting nearly a third of its members back to England. He cited with stern disapproval another colonel, who had very properly been courtmartialled for disgracing himself and the name of the British army by issuing the order "Every man for himself" when his unit had been cut off by the enemy. The curious fact was that more than three-quarters of the men in this second command got themselves back to England sooner or later.

Hold the Line

The story has a parallel in our present problem—not in any advocacy of highly individualized or undisciplined action, but as an illustration of the effectiveness of individual initiative and action when applied to a common objective. The fight against inflation is a withdrawing action and we are in the front line of defense. Our high command may have its grand strategy, but meanwhile it is up to us to hold the line. We cannot act as an organized unit, but there is much that can be accomplished if we will act in accordance with a common policy and toward a common end, against a common peril.

Let us assume, therefore, that the order has been given. It's every buyer for himself, against inflation. But let us also remember that we have a common interest in keeping the casualty list at a minimum. It is no time for opportunism at the expense of our comrades in the struggle, for any temporary respite we may gain for ourselves that permits the adversary to advance or

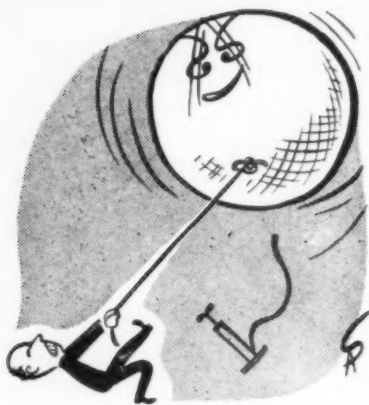


consolidate its gains in some neighboring sector will surely rise to overwhelm us in the end. With this understanding of the general situation, we may pause to brief ourselves on the best strategy and conduct to insure an effective resistance.

Get Tough

First, it's a time for purchasing agents to get tough, and by that I mean that we must get back to doing the job for which the purchasing department was created. We must become buyers once more in fact as well as in title. For five years, through the force of circumstances and government regulation, we have fallen into the habit of accepting almost everything connected with a purchase—except delivery promises—without question. We have been schooled in the philosophy that price was a secondary consideration, and most prices were fixed by law anyway. We have not operated in a competitive business system, either in respect to our own procurement and production or in the approach of our suppliers. Our policy and our procedure were decided for us—the specifications on which we bought, the precedence of our requirements on suppliers' lists, and the quantities we were permitted to order and to hold in stock.

Two habits in particular have had an insidious effect on purchasing. We have come to rely on priorities as the sum of procurement know-how and performance. The red tape about which we complained so bitterly in the war years, but accepted as a necessary evil because it was in fact designed to help us get what we needed, became a crutch. Now, once again, we must stand and walk alone, and some of us have all but forgotten how. It is particularly hard on those who have come into purchasing work during the past five years and have known



no other system. Perhaps you have some such men in your department. They will need your sympathetic guidance and intensive training in order to cope with the present responsibility.

The second unfortunate habit is to think of procurement primarily as an expediting function. We have learned that purchasing is a matter of scheduling. That is true, and what we have learned about the science of scheduling is one of the permanent values of our war-time experience. It should stand us in good stead now. But it is only a part of the real definition. Purchasing is more than scheduling and expediting to meet the schedule. And now that we are once more on our own, we must plan our schedules not alone on the production quota, but in the light of all sorts of commercial and economic considerations as well—the relative advantages of procurement by purchase or by manufacture, economical ordering quantities, inventory policy, alternative sources of supply, contract versus spot market purchasing, and perhaps most important of all, judicious timing.

These are all familiar factors to the seasoned buyer, and they must again be brought into play as we are called upon to do our buying in inflationary markets. It may be summed up in the phrase: "Back to Fundamentals". Let us remember that the fundamental definition of the purchasing function is the relentless search for value, and that means finding the one best quality for the purpose, in the right quantity, at the right price, at the right time, and from the right source.

Let us remember also that we are buying again in competitive markets. To find and to secure the best value, we must explore those markets, and we must keep competition alive.

And since price control is still in effect, let us remember that a

ceiling price is exactly what the term implies. Price ceilings *tend* to become the market level, but you and your supplier won't go to jail for negotiating a price below that figure. Such purchases were not unknown even at the height of the war production program, and under an alert, selective purchasing policy these opportunities will become more rather than less frequent.

Contract Clauses

There are some difficulties peculiar to the present situation. For example, escalator clauses in sales contracts have special significance in an inflationary period. Court rulings have sustained this practice, even under certain conditions when price advances may be retroactive. Army and Navy contracting officers can't get away from this hazard; much less can the buyer in private industry. But there are a couple of things that can be done about it.

In wartime purchasing escalator clauses and termination clauses could be—eventually were required to be—passed along in successive stages of procurement so that the risk of loss was minimized in respect to any individual buyer or seller in the whole long chain of the industrial process. That opportunity of passing the risk along the line is harder now, particularly if your company is selling in the consumer market. The inflationary alternative of pricing your product with a liberal margin of safety is partly precluded by price ceilings and partly by competition.

Escalator clauses are designed to protect the seller. It is the purchasing agent's responsibility to protect his company as a buyer. That is particularly important now that the risk is entirely for the account of the individual company. When we are dealing with inflation we can never afford to lose sight of the inevitable "morning after" which follows sooner or later, and often with astonishing suddenness, as values seek a reasonable level and usually go below.

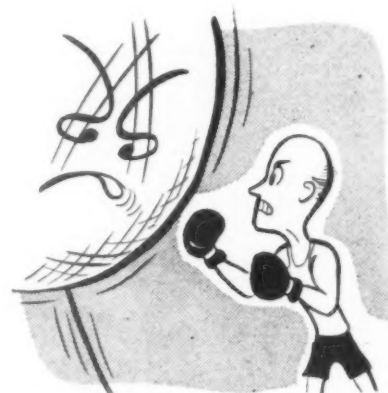
Two things a buyer may insist upon with such clauses: (1) They should be made to work both ways, so that the buyer may have the advantage of a possible decline as well as the disadvantage of a possible advance. (2) They should provide the option of cancellation without penalty upon notice of a price advance. To be sure, this does not accomplish the procurement, and it may become necessary to find some other source; but it does enable the

buyer to avoid a purchase which may have become economically unfeasible, and to escape from piling loss upon loss.

Purchasing Science

Secondly, this is a time for all purchasing men to get scientific. You can't get value unless you know value. The government has a word for it, and we shall do well to borrow their technique. Every purchasing man should constitute himself a fact finding committee of one, rather than to accept the demands of inflation unquestioningly, so that he may base his decisions and actions on well established knowledge of the problem and the various possible solutions.

A good place to start your fact finding is right in your own plant. It is well known to every experienced purchasing agent that the greatest potential savings are not in price but in finding the most efficient methods and equipment and materials for accomplishing a given purpose. There are substantial



economies to be effected even in the purchase of utility services, obtainable only from a single source and at prescribed rate schedules, by selecting the most appropriate type of service and equipment. Still greater opportunities exist on every hand in respect to production, maintenance, and administrative requirements, all contributing to a favorable profit statement. So every requirement, and every requisition, should be put to the functional test: Is this what we really want? Does it represent the most suitable material for the purpose, the best way of doing the job? Not until these questions can be answered in the affirmative are we in a position to proceed intelligently toward making an economical purchase.

The second field for fact finding is in the realm of price analysis.

What are the elements that go to make up a market or a quotation? We don't have access to the records of our suppliers to determine actual costs. But we do have a pretty good idea of what goes into a product, both in the way of materials and processing or fabrication. Somewhere in our own shop or in our past experience there are comparable operations that will give us a clue as to what things ought to cost. We can't tell whether pricing is realistic or inflated unless we have some such standard to guide us. Many purchasing men recall the comment of General Bill Knudsen when he spoke informally at the Chicago convention in 1941, advising every buyer to know the price per pound of everything they buy—casting, forging, stamping, machined part, or intricate assembly. It's a rough and ready method, but it's a sound start in the direction of price analysis. Knudsen is an eminently practical man; he knows what he expects his buyers to know about what they buy.

Price Analysis

Beyond giving the purchaser this assurance of value, price analysis provides a factual basis for negotiation, far more effective than any generalization or abstract plea. It can well be the No. 1 weapon in the purchasing agent's arsenal. Furthermore, it provides an understanding of the supplier's position, and enables the buyer to protect and strengthen his sources of supply by giving due consideration to his vendor's problems as well as to his own. You like to deal with a seller who knows his business and tries to adapt himself to your need. Be assured that this feeling is mutual, and it is only by working together, with mutual confidence, that we shall be able to cope with our present problem. That goes for buying in any sort of a market; it is particularly important today.

The third field of fact finding is in relation to vendor's facilities and management policy. Not all producers are equally well equipped to serve your needs; not all are equally progressive, equally eager and competent to keep costs and prices where they belong. It is a part of the buyer's stock in trade to know his supply sources intimately, their particular advantages and their disadvantages. Only then can he be properly selective in allocating his business. And only then can he work with them in finding the possible changes in ordering and in

manufacturing, the corners that can be cut without detriment to the product, by which costs can be held to a minimum.

Be a Pioneer

Thirdly, this is the time for the purchasing man to be a pioneer in the application of new ideas, new materials and methods to his company's product and operational needs. We have all heard a great deal about the new world of tomorrow—and tomorrow is almost here. Perhaps we have been inclined to discount the more fantastic claims and predictions, for purchasing men are inherently realistic and conservative, but we can't laugh off the facts. The atomic bomb gave dramatic emphasis to the scientists' claim that fifty years of technical progress have been crowded into the past five years. The citizens of Hiroshima, who were closest to that demonstration, are not in a position to profit from it. We are, and we are remiss in our duty if we fail to recognize the implication that we are indeed entering a scientific age that may be as revolutionary in its effects upon industry and civilization as was the development of mechanization and power a century ago.

The greater part of this progress has been in the nature of application and utilization. This is the main problem in respect to atomic energy today, and it is the main opportunity in respect to such fields as plastics, electronics, the light metals, powder metallurgy, and a score of similar developments. Plastics, for example, have gone far beyond the gadget stage and have proved themselves as structural product components, binders, finishes, insulators, fabrics, fibres, adhesives, and as substitutes or improvements upon natural rubber, glass, wood, and a host of other common materials. There are literally thousands of different compositions and combinations available in this classification alone, each with its own individual properties and characteristics, and many more are on the way to meet special requirements as they may arise. Do we know where they can be used, how they can be worked, which ones to select and which to avoid for a given purpose? And are we aware of the astounding progress that has been made among the familiar traditional materials that are fighting to hold their market against this new competition? Business history shows us that prices trend downwards in new products as new uses and greater volume outlets are developed. Here may be one of the most potent an-

swers to our problem of rising costs.

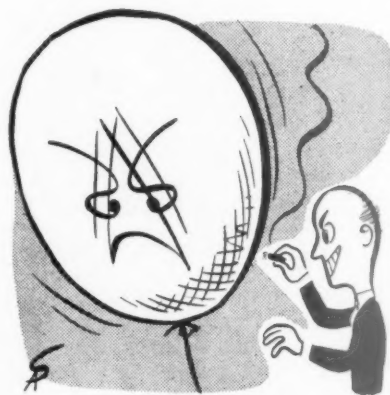
One member of this association has cautioned his buyers that they should not be the first to buy a new product. It may be insufficiently tried in service. It may be but a half-way step toward further improvement as producers foreshorten the normal development time and rush their product to the market in order to gain a foothold. It may be wholly satisfactory from the standpoint of utility and design, but may lack the consumer acceptance necessary to make it a sound purchase. It is not the function of the purchasing department, he contends, to put his company in the position of being an experimental laboratory and staking its position in the industry on the outcome of these experiments.

All of these factors are worthy of the most serious consideration. Perhaps we should not be the first to buy. But neither should we be the last. It is an axiom in any field that the follower can never be the leader, and that a stern chase is a long chase. The practical course for us to follow as buyers is to be alert to all of these possibilities and how they can be applied to our business. We must take the initiative, exploring the field in advance of our need, that we may be prepared. We must be sure that our engineering, production and marketing executives are apprised of these possibilities. And we must be daring, once our judgment is confirmed by all the facts at our disposal.

Be Conservative

Finally, this is a time to be conservative. The purchasing agent who loses his sense of perspective in the competition to get materials does a disservice not only to his own company but to the whole national economy. He stimulates inflation rather than checks it. This is the whole history of the black market, which flourishes under such conditions in

Continued on page 374





Delivery of fabricated parts directly to the assembly line may be more profitable than making them in the shop.

COST IS WHAT COUNTS

When the policy problem arises, whether to manufacture or buy a product or part, let a factual comparison of cost decide

By E. L. CADY

A LARGE producer of high alloy castings is investing \$125,000 in special machine shop facilities. Customers of this company want completely finished parts; the alloys are so difficult to machine that to a large extent they wish to keep them away from their own production lines. By making this investment in equipment the company will bring all secondary and finishing operations under one roof, keep them under one responsibility.

Another producer of much the same castings refuses to have any more of a machine shop than is necessary for the building and maintaining of its own production equipment. All machining is subcontracted. The company has plenty of capital available for investment in machines. But it believes that all investment capital should be reserved for better foundry and metallurgical equipment, that the company should invest its money only in the operations which it alone can perform.

Purchasing Agents who buy much the same items from both companies report that neither offers significantly lower prices than the other, although either may be lower on some items, as is to be expected of honest competition.

Here, then, is a direct clash of business philosophies. The one company is working toward the stability of keeping every operation under its direct control. The other prefers the flexibility of subcontracting.

Purchasing for Profit

Managements of the two companies can (and do) get into endless arguments as to which philosophy is right. The one holds that subcontractors cannot be trusted, that they will slow down on one contract and hold up deliveries if a more profitable one comes into the shop, that they will find out who customers are and then go and take the business direct. The other claims that so long as he can hire the drilling of holes

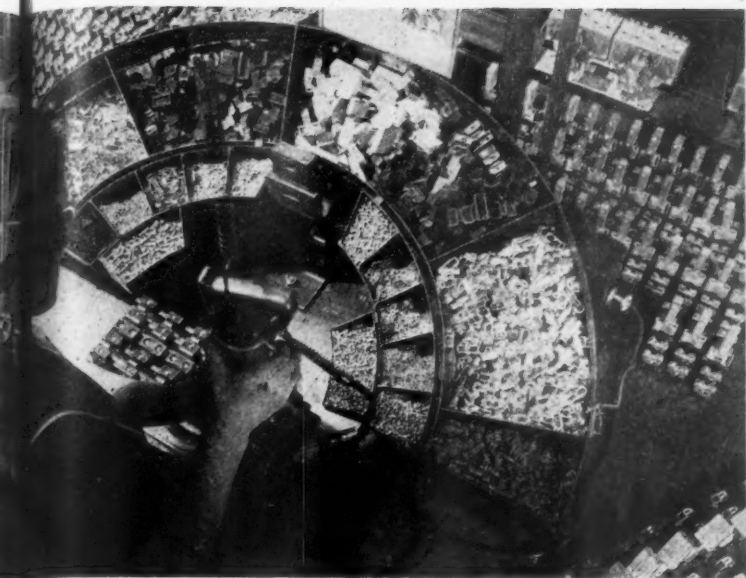
for only one-tenth of a cent per hole and the performing of grinding operations for one-half cent per operation, his wisest course is to put all of his engineering talent and his investment money into metallurgical control operations on which the use of superior equipment and skill can save much larger sums of money.

Their arguments finally boil down to the question of whether the responsibility for large segments of company profits belongs in the production department or the purchasing department.

When every operation is performed under one roof then the purchasing department has to know a great deal about raw materials, and production tools, supplies and equipment. In the normal course of such procurement, the production department decides what is needed to carry out the operation, and the purchasing department buys to satisfy that need, selecting the vendors and placing the orders.

When every possible operation is subcontracted then the purchasing department has to know just as much about raw materials and a great deal more about production tools and how they are used. The buyers and their engineers have to get into subcontracting shops and be able to tell which ones can make a profit while turning out the necessary qualities of work, making the needed deliveries, and meeting the price schedules which will leave margins for the buyer company's profits.

There is a lot more to it than just comparing the price offers of the



The important thing in procurement or manufacture is to see that all components are available as needed, at minimum cost.



The production department is essentially in competition with outside suppliers on every item used by the company.

contracting vendors. Any of a number of actions on the part of a vendor can run his *real* prices so high that all profits in dealing with him disappear. The subcontracting purchasing department has to know how to avoid or prevent those actions. No subcontracting policy is any better than the "know how" of the purchasing department which handles it.

A Buying Problem

The matter of how much a subcontractor ought to tool-up for an operation is important. It involves not only the initial tooling cost itself, but affects the cost of production and largely determines the possible production schedules—therefore deliveries. The potential total volume requirement of a part, as well as the ordering quantity, have a good deal to do with this decision.

The cost of the tools always gets into the contract price somewhere, and it is proper that this should be the case. When we speak of costs being "absorbed", it is usually the customer who does the absorbing. Tool cost may be spread over the cost-per-piece in a single contract; under this arrangement, this cost factor would reasonably be eliminated on subsequent contracts, resulting in lower cost-per-piece. It may be spread over a series of contracts, provided the supplier has the assurance of continuing business. It may appear as a separate charge, which the buyer's company must distribute appropriately in its own cost analysis of the product. Or the company which places the contract may ad-

vance funds to pay for part or all of the tooling.

If the work were performed in the company's plant, then the production department would decide about tools and their costs, the purchasing department helping out in the normal way. But in subcontracting the purchasing department has to decide whether the gains from tooling-up are worth the costs, how those costs shall be financed, and whether the subcontractor has a good enough tool making department so it should make or control the making of the tools or whether the tool production should be placed with a separate contractor.

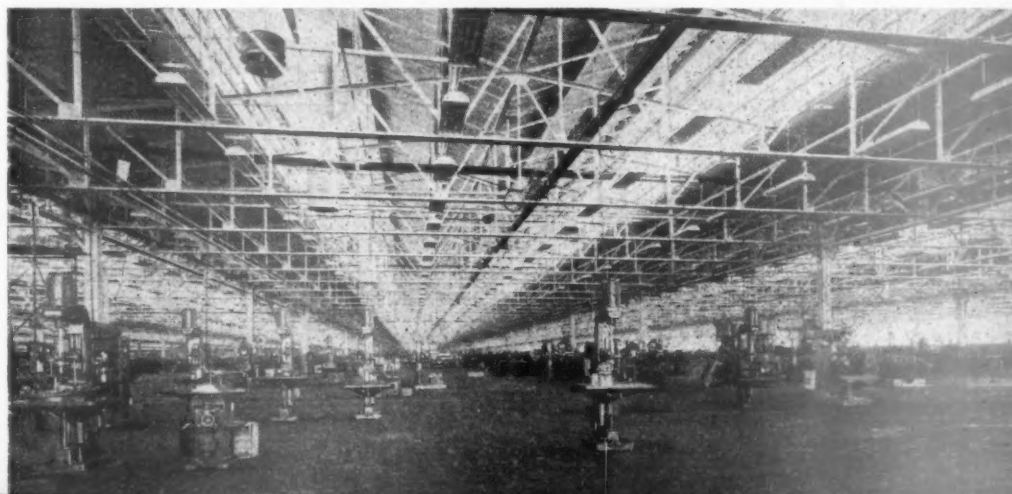
New production machines and processes have to be watched carefully. It is in always taking advantage of the best methods and best machines existing in the plants of vendors that subcontracting offers its high flexibility, its lowest cost opportunities to improve the company product while reducing the

costs of parts and of assemblies. The purchasing agent who has all operations under one roof has only to know when a new method or machine is well enough developed so his present equipment is obsolete. The subcontracting buyer has to be sensitive enough to such improvements so he will know instantly when to take his business out of one shop and put it into another.

A Specific Analysis

A large New England factory makes over 100,000 different metal parts which have to be heat treated. Right now it is making an engineering study of salt bath, flame, muffle furnace, gas impingement, induction heating, and other methods of hardening. Consulting engineers are studying the first 2,500 items with the understanding that when they have worked out the necessary yardsticks for determining what item is best handled by what heat treating

Many excellently equipped war plants are now available to work on regular requirements, and eager for the orders.



In this appraisal of the old question of "Make or Buy?"—which has fresh timeliness in the light of reconversion problems and the war-time experience of subcontracting—the author proposes a new concept of competition. Should production operations be regarded as the prime factor in company policy? Or should production compete just like any other source of supply? The answer may make a tremendous difference on the balance sheet of company profits. And the Purchasing Agent has a position of key responsibility in getting the right answer.

process, the company engineers will take over and carry on.

There is a reason for this agenda. Much of the heat treating operations schedule will be placed in the hands of the purchasing department for subcontracting to commercial heat treaters. The consulting engineering firm is a neutral umpire to determine which heat treating operation shall be under the responsibility of the production department and which under purchasing.

So far, no more than 20% of the items studied have been found to "belong" to any one hardening method or equipment. For the company to revitalize its entire hardening equipment so that it would have exactly the right furnace, machine or instruments for each operation, would cost hundreds of thousands of dollars more than the company is prepared to invest in heat treating facilities. The hardening work therefore will be divided into several categories:

1. That which can be done to advantage on equipment already installed in the plant.
2. That which needs equipment which the company does not have and is not likely to buy.
3. Operations needing equipment which the company lacks but will buy and install.

There are, of course, other factors such as the possession of unusual skills by some subcontracting vendors, the existence of welding as well as heat treating facilities in some shops, which make for special categories. There is no need to detail them all; that third category is the interesting one.

Outside Experience

Many heat treating processes take a long time to get into actual production. Like many another production operation they look and sound easy enough, but a great deal

of "cut and try" experimentation has to be done before they work with certainty and at a profit.

It will be the task of the purchasing department to deal with subcontractors who have these processes at work and know how to run them. Sometimes these contractors will be independent shops, sometimes they will be makers of the equipment. But over a period of months, and being completely frank about the fact that the company ultimately intends to install its own equipment, the purchasing department will learn just how well these processes work on given parts contracts and will get a clear idea of what equipment to buy and how to run it. In some cases the company may buy up whole contracting shops in order to get skilled personnel right along with operating equipment which is all tooled-up for the work.

A Reconversion Policy

The transition from subcontracting to the use of company owned equipment will be gradual in this category. And there will be instances in which no such transition will take place. One of the elements in the survey of heat treating methods is that from now on the purchasing department shall subcontract heat treating operations whenever it can do so at cost advantages over the production department. This competition between purchasing and production for the right to provide a part or an operation will extend to other lines also. And in plenty of instances the production department will prefer to put its investment budgets elsewhere and leave the subcontracting set-ups alone.

A mid western manufacturer has taken advantage of present market conditions and of subcontracting to save itself from almost certain post-war bankruptcy.

The first step in this management program was to spend large sums of war-made profits on cost accounting.

Careful analysis of the company's prewar costs showed that of the dozens of items in the line only a bare five had been showing any real profit. The others all had been made at a loss, although always with the usual hope that if enough volume could be built up then every item would show a profit.

Being able to sell in the present market anything it could make, the company concentrated on the handful of items which could be made at a profit. All other production lines were shut down. The purchasing department then took over the sales catalog and went out hunting for subcontractors to make all of the other items.

Plenty of contractors were found willing to make some of the items at prices which would permit the company to resell at a profit. But the subcontracting job was only begun.

The purchasing department found, for example, that by making mild changes in the design of a part the production method could be switched from machining to die casting with large savings in production costs. In another case a contractor offered to sell one of the items showing a profit on the production lines for less than it was costing the company to make it, provided other design changes were made.

The product engineering and design department then was restaffed. But instead of reporting only to sales and to production heads, as has been the case in the prewar days, this department now reports also to purchasing.

Experiments were tried with having whole assemblies made outside as compared to buying the parts and doing the assembling in the plant. Sometimes one method won and sometimes the other. But decisions always were made on the basis of actual costs, with no favors shown either production or purchasing.

In the meantime the production department was busy with retooling. Item after item was taken away from subcontracting (if any subcontractor had been found to make it) and was restored to the company's own plant.

Equilibrium between producing and subcontracting has not been reached and probably never will be. There are items for which the retooling of war-bought high speed

production machinery will take another year; in the meantime they will either be subcontracted at a profit or kept out of the line. And nearly every item will be constantly subject to the challenge of production line vs. subcontractor or the reverse.

The purchasing agent recently made a recapitulation of the situation. Ten items are now being subcontracted for every one made on the production line. Subcontractors who actually have orders offer the company the use of more than \$1,000 worth of equipment for every dollar's worth in its own shops. The flexibility with which production can be fitted to sales is limited only by the supplies of raw materials available to subcontractors, and is immeasurably greater than in the old days when the company insisted upon either manufacturing everything or else not selling it.

A Continuing Program

One of the larger department store chains makes similar recapitulations continuously. The company controls several manufacturing plants either by outright ownership, by lease arrangements, or by advancing so much money for tools and for working capital that it has a strong voice in company management.

These plants make everything from furniture and toys to show cases. And as regularly as a purchasing agent might restudy his steel or his lamp contracts the company challenges the right of various items to continue to be made or supplied by its own production facilities.

The challenge is partly in the hands of the product design department, partly in production engineering, partly in purchasing. Materials in use are challenged as well as pro-

duction methods.

The purchasing department has the right to challenge any item the instant the existence of new production methods in the hands of subcontractors becomes apparent. In addition, the purchasing department makes a special search for new and better subcontractors or production methods and equipment whenever any of the company executives challenges an item.

Trial subcontractors are placed. Materials sales engineers are called in. Alternative production methods are studied. And the company, which has consistently shown profits, boasts that it never has continued for more than a few weeks to make any item which it could subcontract or purchase for less.

Varied Facilities

Away back in the depression, one of the large insurance companies learned some interesting things about the costs to run its printing plant.

Like many another company which needs so much printing that it can run its own plant at a profit, this one liked to design all printed pieces to fit its own presses and to keep those presses busy. But it happened that a high executive wanted a job for which the company's printer's did not have the proper facilities and an outside printer had to be called in.

Before the Purchasing Agent talked to the printing salesman who called to bid on this job, no printer had considered that insurance house to be a prospect. But when the P.A. had talked with these men he realized that there was many a job which could be bought for less than the cost of running it through his own presses. Today, that company

is one of the largest buyers of printing in its city, and its own press facilities have been improved. There probably is not a single printing plant in the world which has all of the different printing processes and facilities which a large insurance company ought to use. And failure to use all kinds of processes is certain to raise the costs or lower the effectiveness of printed pieces, or both.

Decisions Based on Facts

A frank and factual appraisal of what items a company ought to buy and what to make, then, is almost certain to cause changes in what that company does. But all too often the question of "make or buy" is decided upon specious arguments which have emotional rather than factual bases.

Subcontracting usually requires more capability in the purchasing department than complete manufacturing. But the additional required effort and knowledge can have an incentive effect which leads to better and more profitable purchasing.

The Purchasing Agent who is allowed to compete with the production department on a strict factual analysis basis is in an excellent position to show what he is accomplishing for the company. He can show that he saved money or made profit by buying something for less than its cost to make, by causing to be made in the plant something that he used to buy, and by finding and developing for the company new production methods and techniques which will be installed along its production lines. And the Purchasing Agent who is able to prove the value of what he is doing is likely to get credit for doing it and therefore to do it unusually well.

Wartime procurement demonstrated the important part that small suppliers may contribute to the procurement program.

Capacity utilization of production equipment is highly desirable, but it is not always most efficient or economical.





By **DAVID A. KOSH**
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Procurement Division, Treasury Department

THE Federal Government has found that central procurement of utilities services is a paying proposition. Because of the technical peculiarities of the "products" involved, and the peculiar legal and economic circumstances that surround the sale and purchase of these "products", correspondingly special procurement methods had to be developed. Those factors, coupled with the fact that the Federal Government is such a large buyer, spending in the neighborhood of five million dollars a year for electricity, and eighteen million dollars for local and long distance telephone service, in Washington alone, have resulted in the establishment of a specialized staff to handle the procurement of utilities services.

This article is written with the idea that a statement of some of the problems encountered, and an outline of their solution, might be of use to other purchasing departments, whether in government or in commercial and industrial concerns. For purposes of the discussion, this article is restricted to a consideration of the procurement of electricity and communication by telephone, telegraph and teletype, although the principles developed herein apply also with considerable force to the procurement of other utilities services such as gas, steam heat, water, and cable communications.

Special Conditions

The procurement here involved is of services rather than things. The implications which this entails are

that these services must be obtained when needed and used directly, no storage being possible. With but very few exceptions, utilities services are sold by monopolies; that is to say, the service can be obtained in a given area from only one vendor. In most cases, the prices for these services are fixed by regulatory commissions, and discounts from established rates are illegal. However, it is most important to note that this does not mean a single, uniform price per unit regardless of the quantity purchased. These services are classified by type and use characteristics, with separate rate schedules or pricing formulae for each classification. Typical of this situation are residential and commercial rates for electric energy; day letter, night letter, and serial messages in telegraph communication; and party-line or individual line telephone service.

These services are usually standardized so that no specifications need be drawn up, except of the very simplest sort: a Kwh can mean but one thing. This statement is subject to modification in the communication field, where service quality is subject to adjustment. Thus, whereas telephone companies stand ready to recommend "standard" service, a PBX installation can be so designed as to a more economical service, if the speed of service is reduced. In other words, it is possible to obtain a less efficient service for less money. This is also true in certain phases of the telegraph field.

In view of the fact that the service is bought from a local monopoly, at prices fixed by law, the need for advertising for bids, and for receiving and analyzing bids, is obviated.

Thus the procurement of public utility services is based primarily on the answer to two general questions:

A. What is the proper service to meet requirements?

B. What is the proper price for a given service?

In order to do the kind of job outlined above, the Procurement Division of the Treasury Department organized a Public Utilities Division staffed with technical engineers in the fields of cost analysis and rate design.

It is well to note that the engineers and rate engineers must work together. The determination of a technically fine communications system is, from the point of view of Government procurement, only part of the job. The system must not only be able to do the work, but must be able to do it at the most economical cost.

Rate Engineering

The rate engineering factor plays an important part in the procurement of utilities services. As a general rule, the various utility companies can be depended upon for a satisfactory engineering job; i.e., service will be good. For example, in the electric power field, voltage and frequency will be controlled with desirable limits, and outages kept to a reasonable minimum. In the field of communication, transmission quality will be kept up, as will speed of service. However, when it comes to pricing these services, we cannot so readily accept the adequacy of the utilities' offerings. Utility rates, especially power rates, are complicated affairs, and to adapt a rate schedule to a given type of use is an intricate problem, requiring knowledge of technology, accounting, statistics and economics.

The intricacy of the rate engineering problem arises from the following basic principle of utility rate making; the cost of a given type of

COMMUNICATIONS SERVICE

There's a real procurement job to do even though utilities service usually is available from only one source and the rate schedules are fixed



Requirements of light and heat must be considered as well as power

service is the value of that service or the cost of that service, whichever is the lower. To put it differently, a given customer or group of customers *will* pay no more than the service is worth to them, and *shouldn't* pay more than the total cost (including profit) of providing that service.

The value of the service is often measured by how much it will cost the customer to obtain a comparable service by other means—for ex-

ample, by a privately owned plant for electric power, or by airmail vs. night letter, telegram or teletype vs. telephone in the communication field. It is well to recognize that at best, value of a service is very difficult to determine, becoming merely a subjective estimate in most instances. As a practical matter, value of the service generally has effective meaning only with respect to large power users, where privately owned

plants are economically feasible.

However, when we come to cost of the service, we are on firmer ground. The problem becomes one of cost analysis, involving a particular utility and a particular service.

This type of analysis has two phases. The first is to determine the overall cost to the utility of providing the total service to all of its customers. That total cost is defined as the operating expenses, including

EXAMPLE I

COMPANY X—RESIDENTIAL SERVICE

Availability:

For residential lighting, cooking, heating, refrigeration, and other small residential power through one meter for individual residences or individual family apartments, and hall and basement lighting in apartment houses when served through a separate meter. Other apartment house power such as central unit refrigeration, dwellings accommodating more than four paying guests, or any other commercial usage will not be served under this schedule.

Rate:

First 20 kw-hrs or less, per month	\$1.11
Next 20 kw-hrs per month	5.0 cents per kw-hr
Next 40 kw-hrs per month	4.0 cents per kw-hr
Next 120 kw-hrs per month	2.0 cents per kw-hr
Over 200 kw-hrs per month	1.5 cents per kw-hr

Minimum Monthly Charge:

The minimum monthly charge is \$1.11 per month.

Contract Period:

The term of contract for service under this shall be one year.

taxes, plus what lawyers like to term a "fair return on fair value". Volumes have been written on what is a "fair return" and what is a "fair value". In any event, conflicting opinions are presented for adjudication by commissions and perhaps by the courts, and somehow the total cost is determined.

The second phase of cost analysis involves the allocation of the total cost among the various classes of users. These classes are determined by the characteristics of their use of the service. In the electric power field we have residential, commercial, small power, high tension, etc., classifications. In the telephone field we see individual line, party line, metered service, etc. In the telegraph field we have telegrams, night letters, book messages, etc. In each of these classifications, because of similarity of use, the cost behavior is generally the same. This of course does not mean that each customer within a given class will pay the same amount regardless of the amount of service he takes. It does mean that the variation between cost and amount of use is the same for customers within a given class, or, to put it another way, the cost of providing a given amount of service is the same for members within a given class.

It must be recognized that as the type of use changes, not only the scale of charges varies, but the items for which specific charges are made also vary. For example, in the elec-

tric field the small consumer is charged on the basis of the amount of energy he consumes; for the larger user, cost of service can be more accurately assessed by recognizing in addition the demand measured in Kw (not Kwh), or the rate at which energy is taken. It makes quite a bit of difference in cost to provide 100 Kw over a period of an hour (a demand of 100 Kw) or providing it in five minutes (a demand of 1200 Kw). To cite another example, in domestic telegrams only the text words are charged for—nothing for the address and signature; but on foreign cablegrams every word is charged for.

For purposes of illustration, a few representative rate schedules are shown herewith. Example I shows the typical form of a small-use residential electric rate, a straight energy rate. Example II shows a commercial rate, with a demand charge feature. Example III is a schedule of charges for telegraphic communication between Washington and the indicated cities for various types and lengths of message.

Reasonable Price

It should not be inferred from the above discussion of cost analysis that utility rate making is an exact science, and that utility rates are set precisely on a cost-of-service basis. There are other considerations that enter into rate making, such as promotional rates to encourage greater use, various social considerations,

etc. But from the point of view of the purchaser of utility service, the nearest approach to a fixed point from which to work is the cost of the service and, where possible, value of service.

Thus in determining whether the Government, or any other user, is paying a reasonable price for a given type and amount of service, the first and most obvious thing to do is to check whether the most advantageous available rate is being used for billing purposes. The next step is to determine whether any of the available rates are proper, and if not, what is a proper rate. That means an analysis of the utility's cost and the allocation of those costs to the various rate classes, and possibly setting up a new rate classification and schedule to fit the use in question.

At present, utility cost analysis is more of an art than a science. The literature on the subject is rather skimpy, especially in the field of communications; and in any event, it is a matter of expert opinion. In short, from the point of view of pricing the service, procurement of utility services is essentially a job of "rate engineering".

Technical Engineering

While it may be assumed that the various services provided by the utility are technically proper, the purchaser still should be able to decide for himself what it is he needs in the way of utility services and what type of equipment will best provide it. At this point we must consider another attribute of utility services. Each type of service requires utilization equipment. This seems obvious, but it has rather important implications in rate making and hence in utility procurement.

Utility service utilization equipment is either bought or rented. In the electric power field there is some option on certain types of equipment. Thus a customer can obtain high tension power, and transform that to utilization voltage by means of his own transformers. The alternative is to buy low tension energy, but that is usually more expensive than at high voltage. Thus an economic balance must be struck between the sum of the annual cost of owning transformers and buying high voltage-lower cost energy, and buying low voltage-higher cost energy.

Another example in the electric field is that of the economy of interconnecting, say, two separate buildings. As is evident from the rates shown in Examples I and II, the

greater the use on one meter, the lower the average cost of energy. Thus 50,000 Kwh with a demand of 200 Kw bought on one meter, at the rate shown in Example II, will cost \$1,066.75, whereas 50,000 Kwh split 20,000 and 30,000, and demand in a similar ratio on two meters, will cost \$1,153.50. To obtain this single-meter purchase, it is usually necessary to connect electrically the two buildings in question. Assuming the legal power to connect (and that may not be available in certain places and under certain circumstances) the problem is an economic balance of the cost and maintenance of the intercommunication vs. the savings available from single metering.

In the communications field the choice of buying equipment is usually not available; equipment must be rented. But a choice is still possible, a choice between the various types and configurations of equipment that will do a given job. A typical choice is between a manual PBX (low equipment rental and low operator cost). In addition, the quality of service also becomes a factor.

In the field of written communications, the factor of utilization equipment results in some interesting procurement problems. For or-

ganizations of geographically widespread nature it is often quite economical to rent inter-city teletypewriter circuits, and even to combine such circuits into integrated networks, rather than send messages in the form of ordinary telegrams. At times a combined use of leased circuits and ordinary telegrams will best meet a given volume and distribution of communication.

In short, it is wise procurement to know not only what end results are required, but the best and most economical means of getting those results. The fact that the supplier is usually a monopolist should not mean that the purchaser needs to sign a blank check. This is no different from the procurement of the usual run of commodities. The purchaser should either write his own specifications or should be able to critically judge a given set of specifications. The difference is that in utility procurement the specifications need not be so detailed. One doesn't have to write a specification for a telephone instrument, or a teletypewriter, or a voice circuit, or a Kwh, but one should be able to judge the technical and economical balance between the various configurations of standard equipment which will do a given job, and, if

necessary, design one's own setup.

The formal contracting and payment for utilities services offers a good opportunity for saving both administrative effort and out-of-pocket outlets for such services.

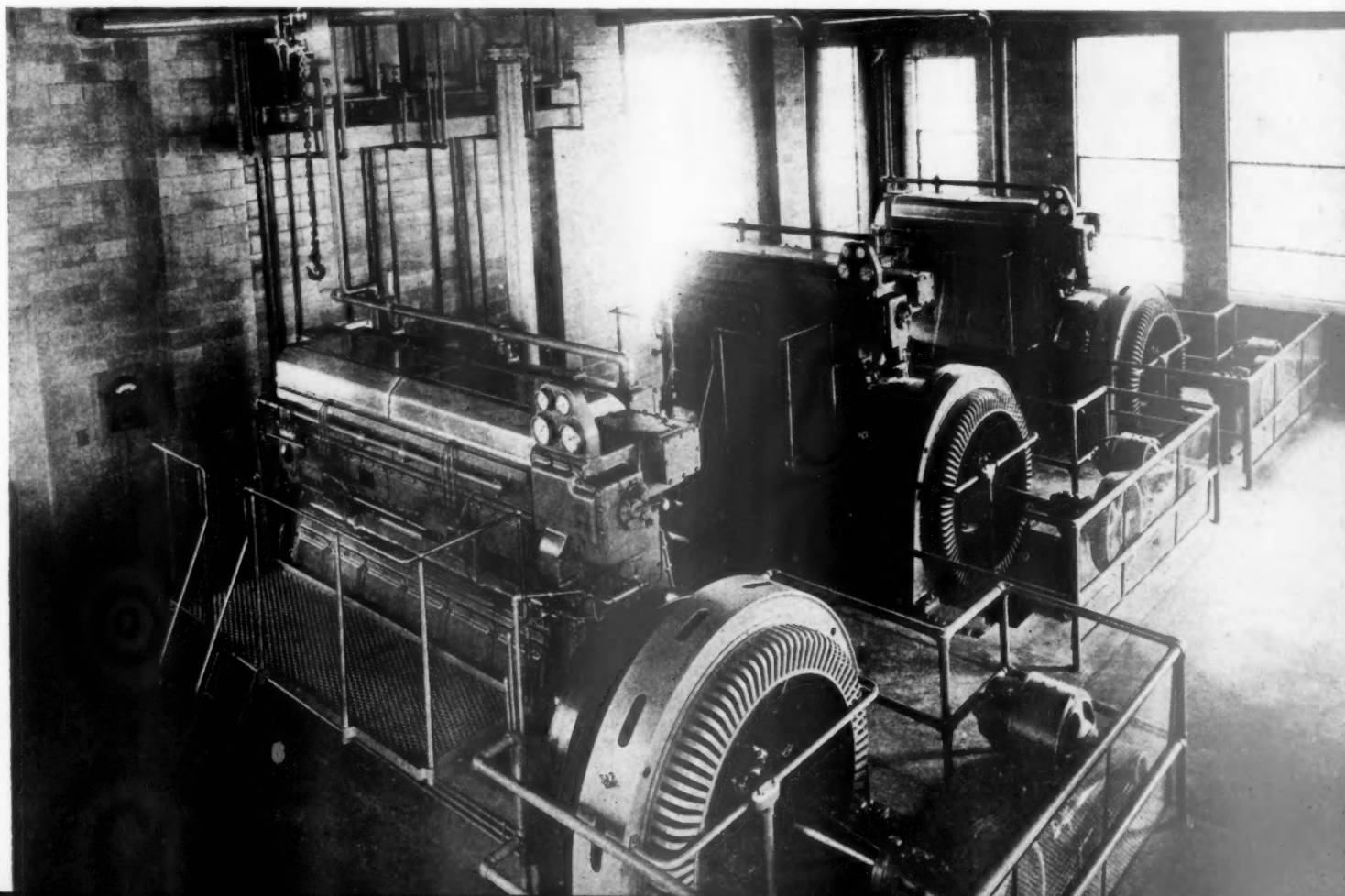
It has been found desirable in many instances to conclude a contract with a utility in a given city, under which contract all Government agencies could order their electric power needs. This obviates the need for a separate contract for each premise, and as a result saves considerable paper work. In some instances such a consolidated contract provided that the Government's total obligation for power was to be paid for by the Procurement Division, after the utility rendered a single bill rather than separate bills to individual agencies. As a result of this single payment, promptly made, rate concessions were obtained.

In short, the mechanics of ordering and paying for utilities services affords a field for simplified administrative operation, as well as for lower cost service.

Power Problems

Although the principles of utility procurement are substantially the same for electric and communica-

The privately owned power plant is a factor in the cost of service



EXAMPLE II

COMPANY Y—COMMERCIAL SERVICE

Availability:

Available for any customer using the Company's standard alternating current service for all electrical requirements, light and power, except a Residential Customer and except that electricity will not be furnished hereunder for resale.

Rate:

Demand Charge (Monthly)

No demand charge, as such, for the first 5 kw of maximum demand in the month.

\$1.90 per kw for the excess, if any, over 5 kw of the monthly maximum demand.

Energy Charge (Monthly)

First 50 kw-hrs per month	5.0 cents per kw-hr
Next 100 kw-hrs per month	4.2 cents per kw-hr
Next 550 kw-hrs per month	3.5 cents per kw-hr
Next 2,600 kw-hrs per month	2.6 cents per kw-hr
Next 2,700 kw-hrs per month	2.1 cents per kw-hr
Next 6,000 kw-hrs per month	1.5 cents per kw-hr
Over 12,000 kw-hrs per month	1.2 cents per kw-hr

Determination of Demand:

Where the rate capacity of the installation connected is in excess of 5,000 watts, the Company will install a demand meter.

The billing demand shall be the monthly maximum demand as recorded by 30-minute integrated meter measurement.

Minimum Charge:

\$1.00 per month.

Term of Contract:

The term of contract hereunder shall be for one year, and it shall be automatically renewed each year unless written notice by either party is given 30 days prior to the expiration date.

tions, it has been the experience of the Procurement Division that these problems usually involve different considerations and emphasize different aspects. In the electric power end, the problem of rates looms larger than that of equipment.

As previously intimated, the first check on a power bill is to determine whether the particular load is being billed at the most economical rate. While electric utilities will usually attempt to bill a customer at the best available rate, they will not accept the responsibility for this. Refunds for billing at an improper rate are therefore difficult to obtain, and it behooves the customer to observe the old admonition of "Caveat Empor". To do this kind of a job intelligently requires more than clerical skill; it requires a fundamental knowledge of utility rate design. Of course, once it is determined that a given load is best billed at a certain rate, checking of bills is a relatively simple clerical job.

The question of the proper choice

of a rate schedule is complicated in those instances where the customer has his own plant and uses the utility's service to supplement his facilities. There the operation of the plant is influenced by the available rate schedules. If the applicable schedule provides for payment for the energy and maximum demand of the current month, then it is often more economical to run the privately owned plant at a nearly constant maximum-economy load, and pick up the peaks above that level from the utility. On the other hand, if the rate schedule provides for payment for the current month's energy, but the demand charge is based on the maximum demand of, say, the previous 12 months including the billing month (the so-called "Ratchet Demand Charge") then it may prove more economical to buy the base load and carry the peaks on the owned plant. Thus not only is it necessary to be able to handle the complicated utility rate schedule, but one must be able to determine the

real cost of private service. The latter also requires cost analysis. Too many private plants have been installed on the basis of "economy" which was often a snare and an illusion.

For example, in determining the cost of energy from a private plant, one should not ignore the rental on space if that space is otherwise usable. One should not ignore the cost of shifting coal from the stockpile to the boilers, simply because trucks and personnel are available to the organization, if that equipment is usable elsewhere or could be cut down if the plant did not operate.

On the other hand, it is just as bad to err on the other side, and to include items that are not properly includable. Thus to attribute a portion of the salaries of the administrative staff (such as the president of a corporation) to the cost of operating a private plant, when such salaries are payable in any event, is erroneous. The cost of private plant service must be true economic cost—the necessary, unavoidable supply price—or, to put it in reverse, the cost of such a plant is the cost that would be avoided if the plant were not built. This is often called the incremental or out-of-pocket cost. Averages are fatal in this type of analysis.

There is still another phase of determining cost of a private plant. Be sure to take advantage of proper credits. A plant that is built to provide heat as well as electrical power must take full credit for the heat provided for heating purposes, before the cost of the steam going into the turbines can be found.

Incidentally, the economical method of operating such a combined service introduces a seasonal factor. It may be more economical to operate the plant during the heating season for both heating and electricity, and shut down during the summer, buying electric energy from the utility. If the utility's rates have a ratchet demand feature, it may prove more economical to operate the electric power portion of the plant all year round.

Excessive Costs

Where it is found that even the most advantageous rate schedule results in excessive costs of the service, several alternative courses of action are possible. Sometimes the answer is a private plant. Before that is carried into the actual design and construction phase, it is desirable to discuss possible rate adjustments with the utility. Such discussions

are much more fruitful when backed with facts and figures, such as the cost under existing schedules and the cost of a private plant.

Even when a private plant is not in the picture, and it is felt that existing rates are excessive, it is good practice to first consult with the utility in order to attempt some reasonable solution. This may take the form of a new rate schedule to be filed by the utility with the regulatory commission.

If, as a result of such discussion, no solution is reached, and it is still the opinion of the customer that a rate modification is in order, the only remaining recourse is formal action before the commission. The Procurement Division has had only one instance in which it took such action. In this formal rate case it produced complete testimony and exhibits as to all the factors that entered the determination of just and reasonable rates, including the testimony of expert witnesses from the outside. Since in that instance the Government purchased so much energy on all the utility's rate schedules, a rather exhaustive case was presented. The results, as a matter of interest, were very worthwhile.

A staff having knowledge of both engineering and cost engineering is

necessary for a competent job of procuring electric power. The staff, of course, must be proportioned to the importance and the amount of power used, but for even fair sized power-consuming concerns some special power procuring staff is worthwhile.

Communications Problems

Beyond the reasonableness of the rate schedule itself, the choice of the type of service and equipment desired often becomes the problem of procurement of communications services. The recital of several typical problems and how they were solved will demonstrate this.

A simple yet oft-recurring problem is that of a manual PBX vs. a dial PBX. A study of the volume and hourly distribution of communications traffic will readily lead to a determination of the quantity and cost of equipment and number of operators necessary in either case. Beyond cost, consideration must also be given to the faster service as well as the possibility of getting service on a 24-hour basis available on dial operation.

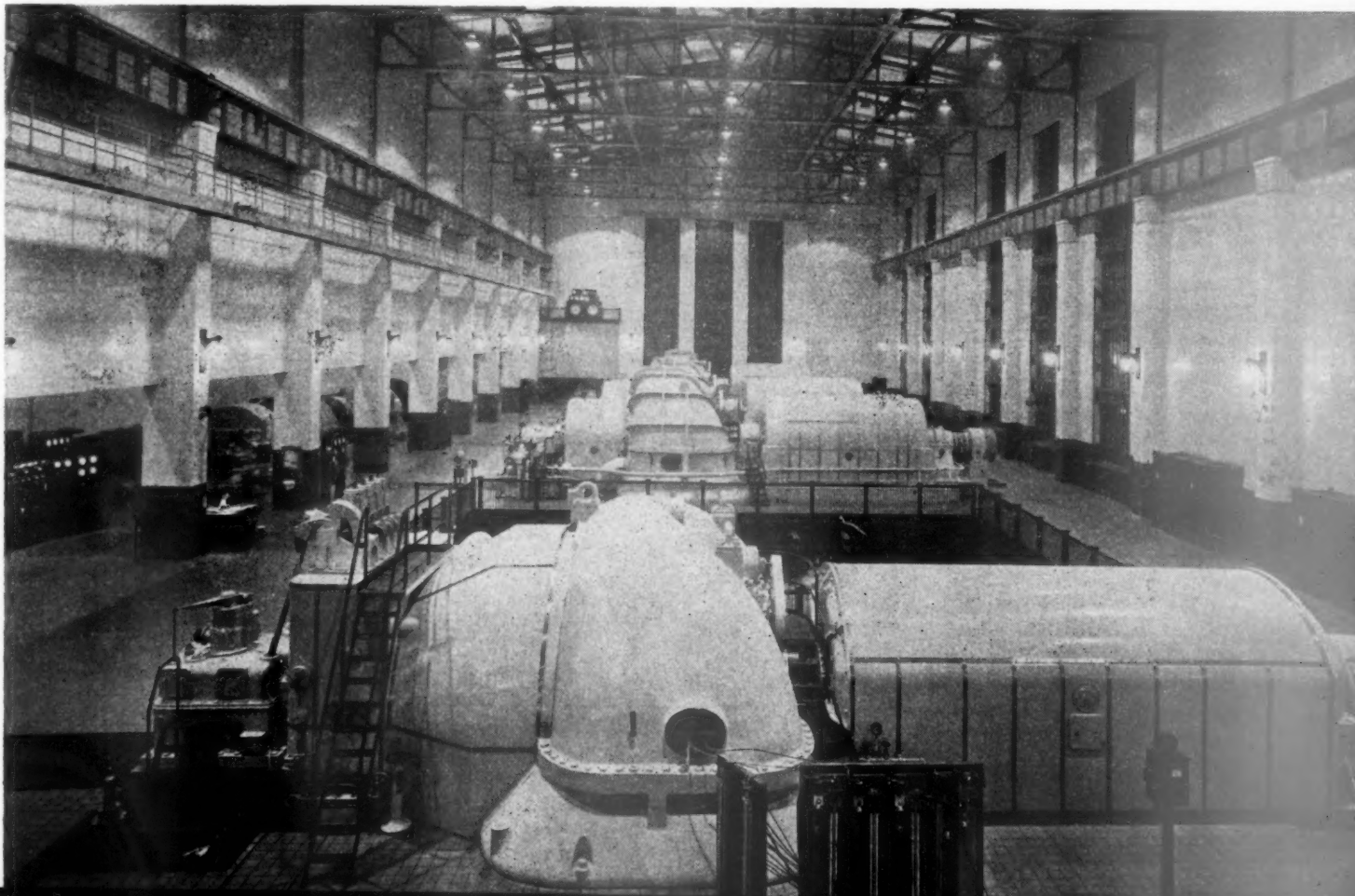
Another typical problem arises when an agency has a large volume of telegraphic correspondence between offices in two or more cities.

Up to a certain volume it is obviously cheaper to send messages by ordinary telegraph, receiving and delivering messages via messenger. After the volume goes up to an appreciable amount, it is worthwhile to hire an operator and send telegrams directly to the telegraph office over a local tie-line (provided by the telegraph company without charge). Messages still go at regular commercial rates.

When the volume begins to exceed 25,000 text words a month, consideration should be given to a telemeter circuit, which is in effect a private teletype line between the two offices involved. The cost of the line varies with the number of words transmitted. When the volume of traffic gets still higher, either a part-time or full-time private circuit is indicated. In each case, one must weigh the speed of service and cost of operations vs. the speed and cost of the other methods.

If the communication is not between fixed points, but is random, the alternatives are straight telegraph service vs. TWX (Teletypewriter Exchange Service). The latter handles written communications on the same basis by which telephone service handles verbal communications. Instead of two tele-

Public utility facilities provide for peak load requirements



EXAMPLE III

TYPICAL DOMESTIC TELEGRAPH RATES BETWEEN WASHINGTON, D. C. AND THE INDICATED CITIES

(Does not include Federal tax of 25 per cent.)

	Telegram		Day Letter		Night Letter	
	30 words	100 words	30 words	100 words	30 words	100 words
Baltimore	\$.80	\$2.55	\$.45	\$.60	\$.25	\$.39
New York City	.86	2.61	.54	.72	.30	.46
Hartford	.92	2.67	.63	.84	.32	.55
Boston	1.18	3.63	.72	.96	.38	.68
Chicago	1.30	3.75	.90	1.20	.46	.90
Kansas City	1.72	5.22	1.08	1.44	.53	1.11
Denver	2.10	6.30	1.35	1.80	.57	1.40
San Francisco	2.90	8.85	1.80	2.40	.59	1.70

phone instruments being connected, TWX connects two teletypewriter machines. Whereas telegrams are charged on a text-word basis, TWX connections, like telephone connections, are charged on a time basis.

Network Service

The above examples are predicated on rather limited operations. In many instances, however, various agencies of the Government have such extensive operations, geographically speaking, that the volume of both written and oral communications is very heavy and directed to many points. In such cases it has been found economical to lease not only individual lines between two

specified points, but to design and lease complete networks interconnecting numerous cities.

One such network is the contemplated nation-wide teletypewriter network, which would consist of leased circuits interconnecting 25 to 30 cities, and would be available to all agencies and departments of the Government. Not only would messages be transmitted and switched from any point to any other point on the system, but a message to a point off the system would be refiled via the telegraph company from the point on the system nearest to the point of destination. Such a teletypewriter network not only will result in rapid transmission, but will

also provide, under the proper conditions, a very economical operation.

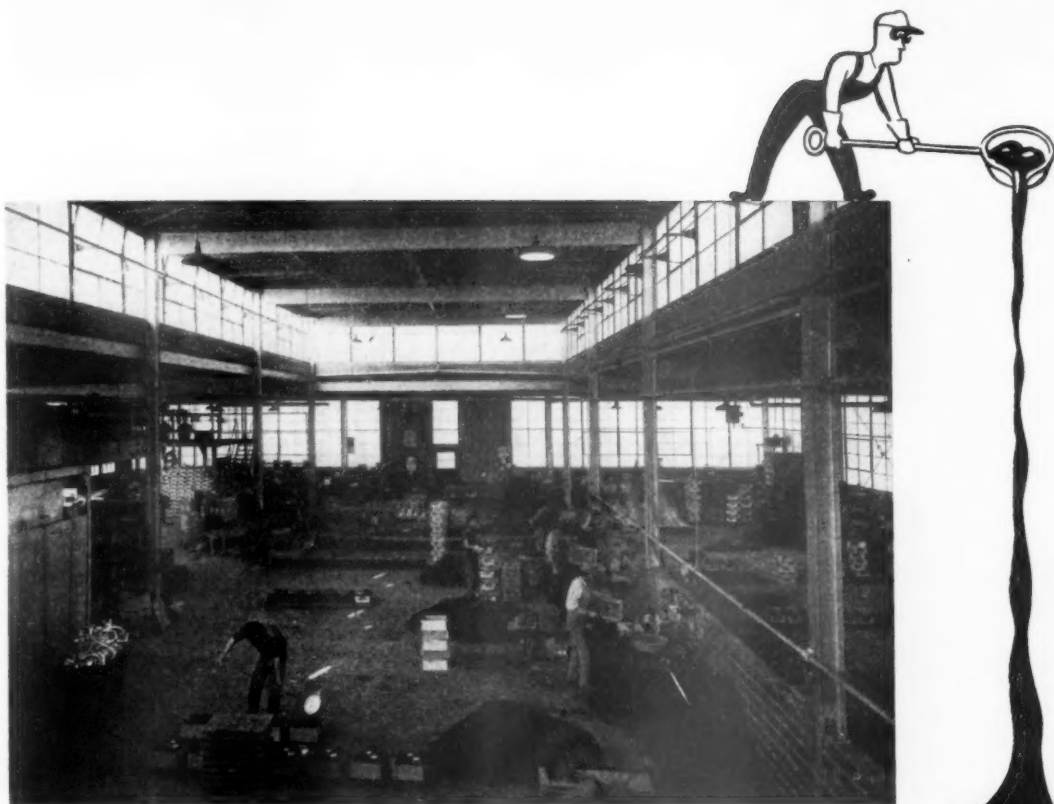
A similar network of telephone circuits, somewhat different from the teletype set-up in the switching aspects, is well along toward completion. Estimates of the economy of such a system show a saving of about \$500,000 per year as compared with the present cost of obtaining that service.

Still another problem which arose in the District of Columbia, was that of devising an efficient and economical method of providing telephone communication among the various agencies and departments. Throughout the years there arose a combination system of providing that service, consisting of direct tie-lines between certain agencies and a central manual board operated by the telephone company through which inter-agency calls were switched. To replace this dual system, and to provide faster and more economical service, there was devised a tandem automatic switching center, connected with each agency and department by groups of lines. Each such connected agency is assigned a 3-digit code. A person calling a given agency dials the appropriate code and the switching center automatically rings the PBX operator at the called agency. The required extension is requested and the connection made. Only one operator is involved, service is fast, and the Government will save more than \$100,000 per year on that type of service alone.

(Continued on page 382)

A wide variety of intercommunicating hook-ups are available





Thoughtful purchasing procedure visualizes the problems of positive identification, accurate receiving, convenient storage and economical handling of cast or forged parts

By Benjamin Melnitsky

POINTERS on PURCHASING CASTINGS and FORGINGS

THE importance of cooperation among purchasing, receiving and stores where bar stock is concerned (see *PURCHASING*, April 1946, page 86) applies equally as well to castings and forgings. Bar stock, castings, and forgings are the same in that they all come under the general heading of raw stores; however, there are distinct differences which must be considered if purchasing is to cooperate effectively with stores and the receiving department.

Primarily, castings and forgings present a double purchasing problem: that of purchasing patterns, molds, and dies, and that of purchasing the cast or forged pieces. Delivery dates are longer and less certain than for bar stock. Often small, marginal companies must be dealt with

and, more often than not, the problems of the vendor become purchasing's problems. The difficulties in getting rush, or even prompt deliveries, on castings and forgings are obvious enough and painful enough to forbear further discussion.

Cooperation by purchasing with receiving and stores will result in greater efficiency in those two departments. This same cooperation will be equally beneficial to purchasing. The following paragraphs list ways and means whereby purchasing can solve some of the problems connected with the procurement of castings and forgings, and at the same time cooperate fully with raw stores and receiving departments.

Materials can be received accurately and promptly only if the ma-

terials can be identified when they are received. If identity of castings and forgings is uncertain, receiving may be delayed or the materials may be received incorrectly, leading to confusion in the manufacturing departments. There are many factors that aid in identifying castings and forgings in the receiving room. Some of them are: the part number, the material used in making the part, the casting and/or forging number (sometimes called pattern number), and the physical appearance of the piece. If all these factors are known, there can never be errors in receiving and consequently there can never be errors in stores. The part number on a piece may not be enough, because one part number may be made from several alternate mate-



Stamping identification numbers on cast cylinder heads at the Wright Aeronautical Corporation foundry at Fairlawn, N. J.



Storage and shop handling are facilitated when suitable containers or pallets of standard design are furnished to the vendor.

rials, or one part may be made from several different castings or forgings. The material used in fabricating the piece is also not enough, because one type of material may be used to make a multitude of castings and forgings. The form and shape of the piece by itself is at best an uncertain means of identification. In short, *all* identifying factors must be known. Purchasing can aid in identifying materials by specifying the following:

1. Part numbers should be made integral parts of molds, dies, patterns, and casting forms so that the part number will appear in raised numbers on every cast or forged piece. Where raised letters cannot be used, impression marking by steel can be substituted. However, the vendor should use impression marking only where raised letters are entirely impractical. If this type of identification is to be used, the purchase order should indicate the exact location on the piece where the mark is to be placed. If parts are stamped indiscriminately, the surface or finish of the piece may be marred.

2. Part numbers should be so located that they remain untouched after all machining has been completed. Ideally the part number should be on the piece even when the part is in the finished unit. In this way, the part number will serve as a permanent means of identification and a means whereby pur-

chasers can reorder and replace parts.

3. Where more than one type of material is used for a casting or forging, the different materials should be distinguished by the use of identifying paint. The colors used for painting ends of bar stock can be used for this purpose as well. Where paint is impractical, the pieces can be stamped with the correct specification number for the material. Purchasing should control the location of the stamp marks on the pieces.

4. If one part number is made from a casting at one time and a forging at another, definite steps should be taken to distinguish the results of the two fabrication methods. This can be done by adding to the part number on the piece the letter "C" for casting and "F" for forging. Thus, part number 44455F would indicate that the part was forged: 44455C would indicate that the part was cast. Appearance alone is not a satisfactory means of distinguishing between castings and forgings.

5. Multiple castings and forgings, those from which more than one part is made, should be stamped so that every part made from the original piece will have a part number.

6. Since the purchase order is the source information for receiving slips and stores records, the numbers listed for castings and forgings should be consistent. Either the

part number or the pattern number should be used. To use the two numbers indiscriminately leads to error. The safest procedure is that of listing the pattern number on the purchase order with a parenthetical listing of parts numbers that will be made from the casting or forging. Wherever possible the part and pattern number should be the same. If more than one part is to be made from one pattern, the different parts can be distinguished by the use of prefix letters or suffix number.

7. Vendor's name, brand, or trade mark should be stamped on every casting and forging. Not only will these marks serve as identification media but the marks will also aid in tracing the source of faulty castings and forgings when more than one vendor makes the same casting or forging.

8. Heat or lot numbers should be stamped on castings or forgings whenever possible. The heat number is the best identification medium available because it can be related to a chemical or physical analysis report for the metal used in fabricating the part.

Physical Handling

Purchasing can expedite receiving and storing of castings and forgings by arranging to have all castings and forgings shipped on pallets, skids, or in special containers. Such

action will reduce handling time materially. Freight cars need never be held up (with demurrage charges piling up) nor vendor's trucks delayed at receiving if this is done. To unload castings and forgings by hand is a primitive and wasteful method.

Many plants design special containers for different types of castings and forgings. The containers are designed to hold the pieces during the storage period and during the entire production cycle. Such empty containers should be sent to vendors, to be returned with the finished castings and forgings. Such action will solve the vendor's problems of selecting proper containers for pieces; it will simplify receiving and storing. If special containers are not available, skids and pallets should be sent to the vendors. The cost of such a program may seem to be prohibitive; yet actual experience will show that it is as economical a move as can be made. The time and money saved in handling materials offset the extra cost of additional containers.

Sample Pieces

Sample castings and forgings can cause needless confusion in stores and receiving. Such pieces are frequently received incorrectly and invariably shipped to stores where they do not belong. Sample pieces should be marked plainly as such. The name

of the recipient in the plant should be marked on the piece; the fact that it is a sample should be indicated clearly. The vendor should be instructed how to identify and mark these pieces. The receiving copy of the purchase order should indicate clearly the destination of sample pieces and how such pieces are to be handled.

New Castings or Forgings

When new castings or forgings are ordered, the purchase order should indicate that the parts are new. Quite often new parts, or old parts made by new vendors, or parts made by new processes, call for more precise and accurate inspection than would be required ordinarily. Receiving, stores, and inspection copies of the purchase order should bear a legible note to the effect that the materials on the order are being received for the first time.

There is usually a considerable lapse of time between the time the purchase order is placed and the time the castings or forgings are received. This gap of time should be used by purchasing to even the flow of castings and forgings into receiving. Delivery dates should be specified so that the pieces will be received in an even flow spread over the entire working week. Rush orders are less frequent with castings and forgings than with bar stock;

hence, purchasing should attempt to arrange delivery dates with receiving's problems in mind. A tickler file of delivery dates can be used to correlate flow of work with receiving facilities. Delivery dates can never be anticipated to the hour or even to the day. But if delivery dates are spread out over considerable periods of time, the general effect will be that of spreading out receipts and eliminating a highly fluctuating volume of receipts.

Where large, difficult-to-store castings are ordered, they should be received from vendors in such a manner as to keep the storing period down to an absolute minimum. Large castings should be delivered to waiting machines as soon as received. Unless the storeroom has extra-special storage facilities, it can not and should not be expected to store such materials. Flow of large castings into receiving and stores must be coordinated with the flow of work in the shop.

Receiving

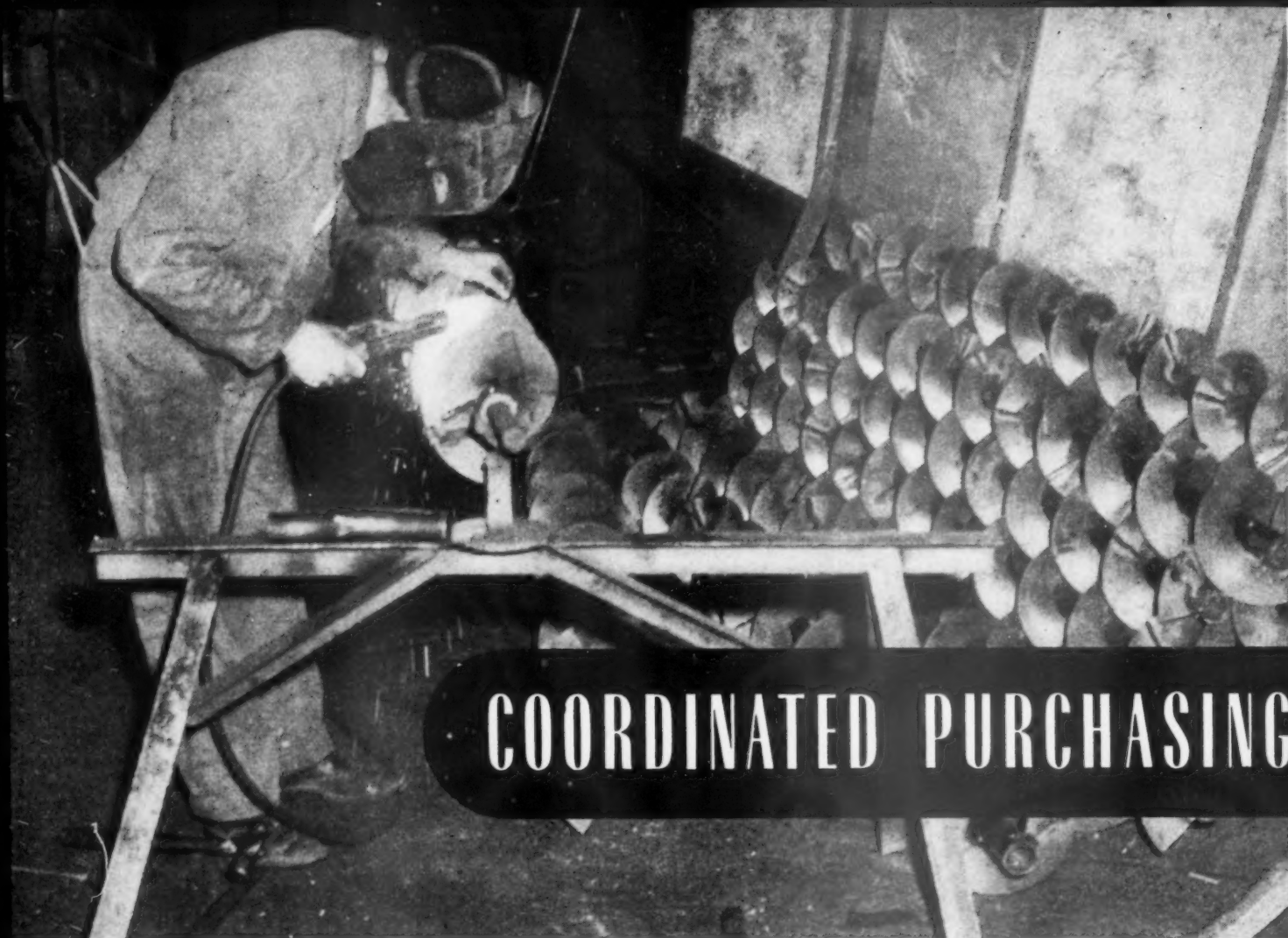
The weight of individual castings and forgings should be noted on purchase orders in order to provide a check against receiving. Where weight of shipment, number of pieces counted, and weight per piece are known, all three factors can serve as quantitative checks, one

Continued on page 380

Identification by heat number is valuable because it can be related to chemical or physical analysis reports on the metal.

Where several parts of similar shape are used, visual identification alone is not enough to prevent confusion in use.





COORDINATED PURCHASING

THE operations of The Conveyor Company, Los Angeles, center around a simple and effective system of production control, which affects purchasing as the first step in production, so that the whole procurement procedure is necessarily tied in with this control. The purchasing department has the primary responsibility of making 100% of all procurements, which represents the issuance of a daily average of from 35 to 40 purchase orders (locally referred to as "buy-outs"). In addition to this, it is right in the middle of nearly all other major operations. Thus it has many functions beyond the actual buying, including the general supervision of the warehouse and store-rooms and some duties of a liaison nature.

All of this has been worked out with a minimum of paper work for the operations involved. The forms are few in number and simple in design. The essential information is concentrated at control points.

And the whole procedure has been worked out to fit into a smoothly operating system emphasizing control over individual job progress through the plant. It is competently handled in this department by Purchasing Agent H. A. Hajee and his secretary, Margaret Hazelrigg, plus the warehouse personnel.

Manufacturing to Order

Some background of the plant and office operation, and the type of products manufactured, will give a better idea of the problems of procurement and concomitant production assistance that continually confront Mr. Hajee. All conveying and mechanical handling equipment can be generally divided into two categories:

1. Standard units manufactured in quantity as stock items, and used singly or in proper combinations for a great variety of uses.
2. Special equipment and components of almost infinite diversity, designed, engineered and manufac-

tured to individual specifications developed from an analytical study of the particular handling problem.

It is self-evident that materially different combinations of procurement and production methods and equipment are required for these two general types of operation. The Conveyor Company is in the second category, manufacturing specialized conveying and allied equipment, made to order. While the manufacture of the standard units can be carried on by mass production techniques, with progressive, repetitive and continuous operations, and at times the special units can partake in good measure of some phases of these methods, the entire production and supply set-up for the latter must have a maximum of operation flexibility and must be tied to the individual requirement. Many standard units are purchased, and others manufactured in quantity, to become parts of the major assemblies called for by specific orders, but a goodly part of the purchasing responsi-

A small company purchasing system in which procurement is regarded as an integral part of production control

By FRED M. BURT

and PRODUCTION



H. A. HAJEE, Purchasing Agent (There is some difference of opinion as to why Mr. Hajee wears his hat much of the time that he is on the job—whether it has to do with a receding hair-line, or whether it is because he is constantly on the verge of leaping up and going out into the shop or yard.)

bility consists in supplying the exactly proper purchased parts at the time needed.

The Conveyor Company can be rated as a smaller plant operation, with somewhat fewer than 150 employees, but with a comparatively high dollar value in manufactured end-products. An area of approximately 150,000 square feet is occupied by office and plant buildings, storage, assembly and fitting yards, and this space is now in process of expansion; the parking areas are additional. The products include screw conveyors, chains, sprockets, belts, buckets, manlifts, hoppers, tanks, gates, rollers, rails, gears, drives, transmissions, shafts, silos, hangers, chutes, elevators, and many other items in a great diversity of combinations. The finished assemblies are used in cement, sand and gravel, concrete mixing and batching, stone and lime plants; grain elevators, fisheries, glass works, icing installations, vegetable and fruit packing plants, canneries, flour

mills, mines, foundries, and many other industrial operations.

Specifications for the equipment are sometimes originated by the customers' engineers; more frequently they are developed from surveys and cooperative analyses by the Conveyor Company's own engineering staff. These specifications are broken down and translated into blueprints and material and parts lists in the engineering department under the direction of Russ Nelson, Chief Engineer, who is assisted by seven engineers and draftsmen.

After the drawing receives the customer's OK, the complete list of all materials required to complete the construction is entered on Order-Requisitions forms (See Form A). Each sheet provides space for listing 22 individual items, and the complete list for a job may require from 1 to 15 or 20 sheets, with an average of 8 to 10.

This listing is done by the Production Manager, T. H. McDowell,

or his assistants. Mr. McDowell has general supervision over the purchasing department, including the order-requisitions and billing, and also over manufacturing, which is directly handled by Ted H. Jackman, Superintendent. Manufacturing is divided into four main divisions: (1) expediting or layout, (2) machine shop, (3) structural, and (4) welding.

The information in the heading of the form, and the quantity and description of each item, are entered in the Production Manager's office. An OK by the credit department, giving authorization for proceeding with the job, is next obtained and duly entered in the heading. Then the customer's carbon copy is detached and mailed. This is a short form on which the columns at the left of the sheet have been cut off and the column rulings at the right eliminated, so that it shows only the quantity and description of items. The other eight copies, with inserted carbons, are then sent to

the purchasing department.

Here a job folder (Form B) is prepared for each individual job number. This is of heavy manila stock, 13½ x 9 inches in size. In it are accumulated all of the records and data that will make up a case history of all supplies and materials used, procurements, costs and vendors, and other pertinent records. The face of the folder is printed for entry of the necessary identification and filing information along the top edge, and also for a complete record of the scheduling and progress of the order through the

filed by job number in the engineering department.

The purchasing department next checks with stores to find out which of the required items are available from stock on hand. For each item so available, an entry "S" is made in the appropriate column at the right. For each item that is not available from stock, and that must be purchased, the letter "P" is entered. The latter entry constitutes the requisition and authorization to buy. Vendors are promptly selected, utilizing past purchase records, the wide knowledge of satisfactory

details of the substitutions made.

When these entries are completed, the copies of the order-requisition are distributed as follows:

Copy 1 is retained in the purchasing department as a working copy. When it is completed, it is filed numerically in a post binder as the department's record.

Distribution of Copies

Copy 2 goes to the Superintendent as a shop copy, giving the manufacturing department information as to when and from where the various items are to come. It is kept in a numerical file until the job is completed, and is then returned to the cost clerk as a notification of this completion.

Copy 3 also goes to the Superintendent and is passed along to the shipping department, where it is held until the shipment is made. It is then returned to the cost clerk and passed along to the billing department as notification of this fact. (Of course the entire set of order-requisition sheets applying to any one job number are kept together as a unit in all departments.)

Copy 4 goes directly to the cost clerk as advance notice for billing. It is collated with the other copies that are returned to this desk indicating completion of the various stages of the order, and it is used for making the pertinent entries received from these various sources, used in compiling the final charges for billing the customer.

Copy 5 (Inventory to Cost) is held in the purchasing department for the entry of additional information necessary for the cost accounting department, particularly in respect to Cash Voucher items (see Form G). When a procurement is expedited by sending out for a pick-up and cash "buy-out", this latter form is used in duplicate. The original copy is placed in the job file folder along with other information pertaining to the project, and the duplicate goes into a special purchasing department file. After the final entries have been made, *Copy 5* of the order-requisition goes to cost accounting.

Copy 6 is the vendor's copy or acknowledgment of the order, and is mailed to him as noted above.

Copy 7 goes to the stores or receiving department, as advance notice of shipments expected, and aids them in identifying deliveries and in making prompt and proper disposition of materials as they are received.



Incoming parts are promptly tagged with cards bearing the job order numbers on which they are to be applied. Stock storage bins are numbered to show location of materials as recorded in the stock file.

stages of engineering, fabrication, machine shop work, shipping and installation. This is the heart of the production control system, appropriately maintained at this point because of the close connection between the purchasing and production departments. There is also liberal space for comments entered, first, in the purchasing department, and subsequently by a cost clerk, who receives the folder after completion of the purchases for analysis, compilation, and calculation. These folders are finally filed, with their contents, in numerical order, as a permanent record in a vault. The drawings and blueprints are

sources accumulated by Mr. Hajee in his three and a half years of buying for the company, and from an exceptionally fine library of catalogs. Purchase orders (Form C) are then issued. The purchase order number and date are entered at the left of the order-requisition opposite each item, and the name of the vendor is pencilled in abbreviated form at the left margin, under the heading "Jobber". If delivery is not to be immediate, the promised delivery date is also entered. In the space to the right of the "S" and "P" entries, notations are made covering any cases of inability to procure the exact material requested, along with

[illegible][illegible]

Bill To

For Info. Call

Address

Salesman

Phone

Joe No.

Buy Outs

Less Brought In

Date Sold	Date Promised	Eng.	Fab.	Mach.	Priority	Ship	Install.	Pulled
Engineering								
Fabrication								
Mach. Shop								
Shipping								
Installation								
Engineering								
Fabrication								
Mach. Shop								
Shipping								
Installation								

B

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action becomes a matter of formal record. This form is similar to the original order in general make-up, and to make its purpose entirely clear the quantity and description of the item "as ordered" are shown in the upper section, followed by corresponding information on the new requirement, clearly marked "Change to" in a section immediately below. The change request is distributed in exactly the same way as the order which it affects and replaces, the original being sent to the vendor and the other copies matched up with the corresponding purchase order copies within the company routine.

Control Ledger

A purchasing department register and control is kept in a loose-leaf ledger. In the first column is the job number, and in the second column a listing of all the purchase order numbers applying to that job. In the following columns, opposite each purchase order number, are the vendor's name, dates of partial and completed shipments, also the dates when invoices are OKed and cleared for payment. These sheets are kept in the ledger for about three months, and the completed ones are removed periodically.

It is the policy in this organization to make occasional purchases for employees. When this is done, the purchasing agent makes out an "Advice of Purchase for Employee" (Form H) on a mimeographed form as soon as the purchase order is issued, and this is sent to accounting for entry in a special account and subsequent charge to the employee, who pays for the purchase directly to accounting. There are no payroll deductions made for such cases.

Stores Procedure

Key personnel of the stores department consists of three men: (1) receiving memo clerk, (2) stores clerk, and (3) pattern clerk.

Receipts generally fall into one of two classes: those which are procured for a specific job order as outlined in the above description of procedure, and those standard stock items and operating supplies which go into the stores inventory. The latter purchases are originated by means of a "Requisition to Purchasing Department (Form J)" which is made out in duplicate by authorized key men in plant, office and engineering departments. When the covering purchase order has been issued, the original of the

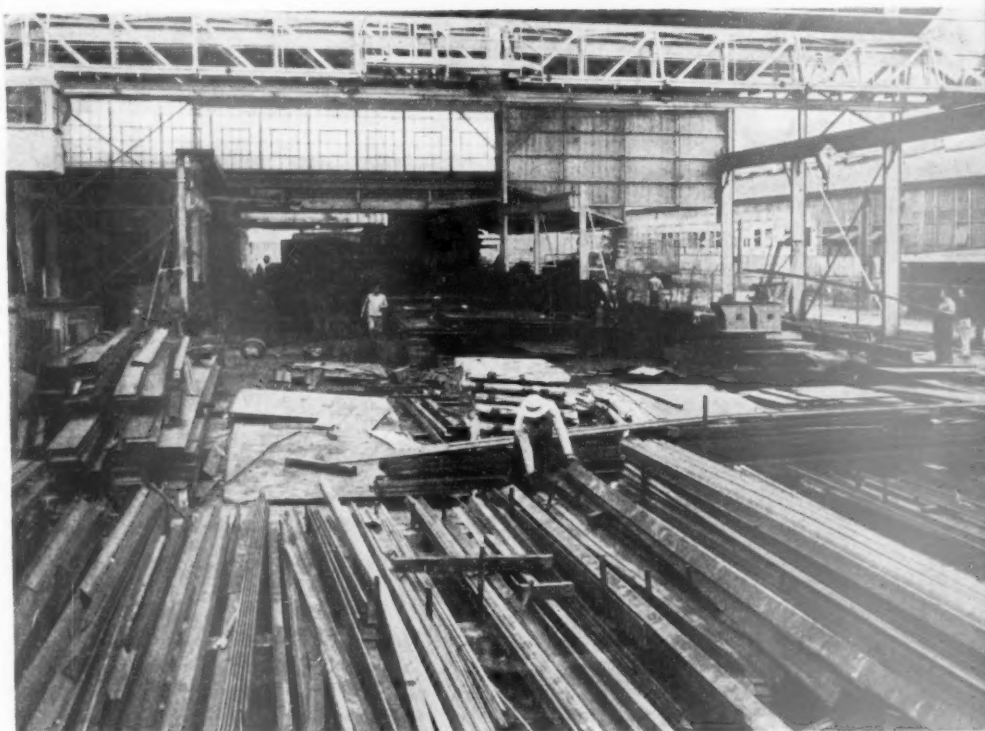
requisition is attached to the yellow (third) copy of the purchase order and sent through expediting to stores (or placed in the appropriate job folder if the item is supplementary to those listed on the order-requisition for a specific job). The second copy is kept in a chronological file in the purchasing department.

As shipments are received, a receiving memo (Form E) is made out in quadruplicate. Copies 1 and 2 go to purchasing with the vendor's delivery slip. Copy 1 is used for checking against the purchase order and against the duplicate copy

as to receipt of materials is therefore essential for his information. Copy 4 is retained in the receiving file.

When partial shipments are received, a mimeographed "Partial Shipment" slip (Form F) is made out along with the receiving memo, and copies of the former are sent along in place of the memo itself, which is held in receiving until the shipment is completed and is sent along when the final delivery has been made.

If the receipt is a stock item listed in the Kardex perpetual inventory, it is entered therein by the stock



The storage yard for sheet, plate and structural shapes is served by a 10-ton electric crane connecting with the fabricating division.

of vendor's invoice. If OK, it is attached to the yellow copy of the purchase order and sent on to the accounting department for payment, the original copy of the invoice having been routed directly to accounting. Copy 2 goes into the job folder as part of the production control record, along with the duplicate copy of the invoice.

Copy 3 goes to the expediting or layout man in the plant. Each job has an expeditor or layout man assigned to it, and he follows through every operation to completion and shipment. The advice

clerk, and a check is made to show that the item has been posted. If the item is for a specific job, the stock clerk attaches identifying cards bearing the job number to each item as soon as received. This greatly facilitates the prompt and proper distribution and utilization of materials.

The pattern clerk has charge of the great number of patterns, sending them out to foundries along with the orders for castings, and also having the responsibility of assuring their return in good condition and replacement in the proper storage racks.



BUYING ON FOREIGN MARKETS

IN the scramble for materials there has been a tremendous interest in foreign sources, with buyers asking "How do you go about importing?" They expect a short, terse reply. The answer, however, is not quite so simple.

A great deal depends on the commodity involved, the anticipated volume, the source of supply and the existing channels of trade. The problem naturally divides itself into the procurement abroad of (1) raw and semi-processed materials, and (2) manufactured articles.

In considering the importation of raw materials the prospective buyer must first ascertain the normal sources of supply. Obviously, where the commodity is under government control or international allocation the intricacies of import are wholly academic. Where such commodities are involved, the process of importation is purely mechanical.

Normal Trade Channels

Where the commodity is available for free trading, the prospective purchaser must then determine what is the most economical way to import the commodity. Assuming that the material is one that has been freely used and shipped to the United

Once again the whole world is a potential source of supply for the Purchasing Agent

Expert advice for the buyer of imports

By William M. Friedlander

Chief, Special Trade Services Branch
Office of International Trade
Department of Commerce

States in substantial quantity, it will be found that there exist well defined channels for procurement.

(a) These channels may be "shippers' agents" who are individuals or firms representing the foreign producer and who normally receive a commission from the shipper. In some cases they have a fixed commission which is added to the purchase order and paid for by the buyer. They will quote for the foreign shipper at a fixed price which may be CIF foreign port, or C&F American port. Normally, the American purchaser will have to make his own customs entry and, if the commodity is dutiable, arrange for the payment of the duty in the American port of entry.

(b) There are many import merchants who usually have been

established for a number of years and who, because of their close contact in the field of supply, purchase the commodities outright in their own way, import them to this country, pay the duty and warehouse the material. They then sell the commodities to the American purchaser at the price prevalent in this market.

These two methods of purchasing are frequently advisable channels for manufacturers to use in their earlier stages of purchasing foreign materials. They offer the services of persons who are thoroughly familiar with the legal and technical ramifications of foreign markets, customs procedures and other details. Normally, this adds slightly to the final cost of the material, although not necessarily as the new buyer in a foreign market must first establish his contacts and maintain certain personnel necessary in the procurement of the commodities.

Direct Purchases

A third method of importation should be considered where the dollar amount involved is of sufficient volume to justify direct entry into the foreign market. Under these conditions it would be advisable to visit the area to determine the best

sources of supply, examine on the ground the obstacles to be overcome, if any, and to determine price levels. The problem of inland transportation must be considered. Steps should be taken to assure continuous production. The inspection of the shipments must be arranged; the proper packaging, and the source of proper packaging material must be determined.

The question of payments is one that must be carefully considered. Most importers have found it advisable to pay cash for their purchases. It usually enables them to effect a saving in the cost of the merchandise and is very apt to give them preference when supply is scarce. Such payments can be effected through the establishment of the remittance of funds to the importer's agent or through opening a letter of credit in favor of the shipper against which he can draw, with the proper documents attached to the draft.

It is of utmost importance that either the shipper or the shipper's agent properly prepare the necessary documents, such as Consular invoices. He should see to it that the bills of lading are properly executed. Where a continuous flow of shipments is anticipated, an open or blanket insurance policy should be obtained that would automatically cover the importer against marine, war-risk, fire and other hazards on all shipments. Most importers have found it advantageous to have this coverage from warehouse (or the point of foreign delivery) to their final American destination.

Special Conditions

There are many changes that have occurred through the upheavals caused by the war. During the war most importations were on a government to government basis. With the exception of a comparably few commodities, private trade is now permissible. Food items, coal, rubber, tin are among those that are still under restriction through the Combined Food Board, the Rubber Development Corporation, or other agencies. In some cases their export is restricted because of a shortage in the exporting country. Obviously, there would be no justification for a country to export food commodities when a food shortage exists in the exporting country.

Commodities on which import licenses are necessary require specific import permits, depending upon the commodity involved. These per-

mits may be issued by the Department of Commerce, the Department of Agriculture or the other responsible agencies.

Importers should be sure to carefully investigate the rates affecting the official rate of exchange of the dollar of the currency involved.

The war has taken its heavy toll, in many areas, of manufacturing plants and producing areas. It would be well to investigate pre-war sources of supply to determine their condition, productivity and what facilities are now available. In some areas it is also well to check on the personnel now controlling the sources. It is quite possible that some may be found that are in distinct political disfavor, who should be avoided.

Government Aids

It has been the Government's policy to remove any and all restrictions and barriers that hamper foreign trade, as quickly as such action is practicable. Nevertheless, many restrictions will have to remain in force for some time to come.

The Department of Commerce, which has undergone a reorganization, has established an Office of International Trade. This Office is responsible for all the import, export and affiliated foreign activities in relation to American business. Former services, such as Commercial Intelligence, are being continued and their services broadened. An Import Advisory Division and an Export Advisory Division have been established within the Special Trade Services Branch. The functions of these two divisions include servicing, advising and assisting the importers and exporters.

Those entering foreign trade can obtain advice and information from the various offices in the Department of Commerce. An American businessman desiring to obtain information regarding legislation or general conditions in any specific area—whether it be Liberia, Siam, or Paraguay—can obtain that information through the Areas Branch in the Office of International Trade. If an importer wants information regarding a specific commodity, his information would be derived from the Commodities Branch in the Office of International Trade.

An importer, desirous of ascertaining sources of supply in foreign countries, can communicate with the Office of International Trade in the Department of Commerce and, in most instances, he will be able to



William Friedlander

obtain the desired information, or efforts will be made through the Foreign Service in the United States to obtain the information. The many Regional Offices in the principal cities throughout the United States are excellent sources of information and their services should be utilized by traders wanting information. Specific problems may be presented and discussed with the business specialists in the Import Advisory Division.

Manufactured goods, and in particular so termed "styled goods"—be they wearing apparel, house furnishings or furniture, toys or similar merchandise of any type—should be purchased either through established import merchants maintaining sample displays, and, frequently, stocks of merchandise, or by personal visit to the producing areas and to the producers. It is exceedingly difficult, and even dangerous, to attempt the importation of such commodities without a careful study of the market requirements in the United States and the production facilities abroad. Before the war, such business houses as had been engaged in import activities usually knew their suppliers and were well aware of their dependability. Great caution, however, should now be exercised to insure that responsible individuals control those sources.

U.S.A. and U.N.O.

The author of this article is currently serving as President of the Purchasing Agents Association of Washington, D.C. He has had the unusual opportunity of observing the temper and aspirations of European business at first hand, as a field worker for UNRRA. Now back at his post at the Nation's Capital, he is close to Washington thought and policies. His evaluation of the politico-economic situation and the means for achieving a healthy business climate and sound relationships within the United Nations Organization is important to every businessman and citizen.

By GREY LESLIE

THE recent forthright statements by secretary of State Byrnes, Senator Vandenberg and John Foster Dulles, reporting on the London Meeting of the United Nations Organization, served as convenient and timely vehicles to convey a long desired clarification of United States foreign policy. It was heartening to sense the positive tenor of these statements which indicate pretty clearly that the limits of conciliation and concession on the part of the Western Allies, and particularly the United States, have been reached—if not long since passed.

The statements themselves presented a survey of the international situation as it confronts the United States today, but they invited a further examination of some of the causes which brought about that situation. There can be no doubt that the main question evolving from the statements is our relationship with Soviet Russia, not only on the implementation of our responsibilities as a Member of the United Nations Organization, but our economic interests with Russia and those under her dominance or influence.

An attempt is made here, therefore, to examine, impartially and dispassionately, some of the less obvious reasons for the leftward trend of Europe, as evidenced by the political complexion of incumbent governments and their principal officials. The undercurrents of this emphatic leftward turn would

The kind of world in which we shall be doing business in the years ahead is being shaped by our foreign policy today. Mutual understanding, rather than compromise and appeasement, will provide the sound basis for a working agreement between the major nations

seem to merit an exact scrutiny—what Voltaire once called the “pedigrees of events”.

Postwar Psychology

The precedents of 1919-1923 are of value to contemporary observers only as the geneses of conditions which have accumulated since then, which have been acutely emphasized by World War II and its aftermath, and which the peoples of Europe seemed to feel demanded prompt redress, effective correction or radical change. Immediately after World War I the compelling motive was to attempt a return to normal. Today there is no norm to which Europe can possibly return. The release from years of ruthless spoliation and barbaric slavery stimulated an irrepressible urge for change—immediate change, any change—and an impatience with any proposed system which suggested caution, delay or postponement. The effects of liberation were like reactions on awaking from an appalling nightmare and included in them a dismal array of mental shock, physical ills and economic dislocations which will require years of convalescence.

It may well be that many of the radical political changes which have been effected will gradually or eventually be recognized as impetuous and precipitate. Many of them, indeed, have already disappointed the high hopes with which they were so vigorously adopted and so rigorously enforced. They may be the initial painful step in the probation necessary for genuinely democratic government.

The greatest political debate of the Twentieth Century embracing the basic issues between capitalism and socialism and between socialism

and communism in their broadest definitions, has now approached its climax in Europe.

It will be common sense for the United States to take a frank look at the dynamic forces which have been ceaselessly at work in Europe and Asia and which are now stirring to some degree in America.

It will be easy and tempting for the average busy American to turn away impatiently from the exasperating complexities of the European





political and economic situation, or to take an easy but questionable refuge in high hopes of the efficiency of sufficiency of some pact or charter, without thinking further of the implementing action which is left unsettled or indefinite. But the war has proved conclusively that among its other more harrowing casualties, the comfortable complacency of the past must be listed.

The Immediate Background

The economic and social conditions in Europe after liberation neatly fitted the Lenin formula for the favorable moment for revolution. Radical experiments are always much more likely of acceptance when major changes are imminent than when peoples are settled into some established routine.

The peoples of Europe had been more or less isolated for years—completely out of communication with their governments in exile, which seemed to be enjoying relatively safe havens. Naturally more

respect and authority were afforded to those who had taken active part in open or underground, *but on-the-spot*, resistance against the enemy. They thus seemed to have proved their moral strength by enduring and surviving the mental and physical tortures of slave-labor or concentration camp, either actually or by the constant threat of them. The industrial plant, utilities and transport had been confiscated or operated by the enemy. After the liberation, the victorious Allies had no means of restoring ownership to the original proprietors. The Western Allies insisted on an attempted restoration to interim governments pending later adjudication. The Soviet moved quickly and decisively however—demanding, seizing and removing capital equipment as reparations, and setting up subservient “friendly” regimes as interim governments. Frequently such regimes were formulated for the sole purpose of taking title to industrial plants which the Soviets insisted

were needed for Russian military occupation.

Many of the interim governments of the liberated countries were organized, by and large, by persons impelled by a wide variety of motives. Some were eager and honest; some were bold and arrogant; some were righteous—even self-righteous; but the fact is that the great masses of the people were apathetic.

Central and Eastern Europe was a vacuum into which a chaos of doctrines and political actions were stampeding. The Soviet penetrated that vacuum with a ready-made formula and a definite plan. That, at least, was a tangible thing, something sponsored by the great Victorious Soviet Military which never lost an opportunity of exploiting its position as the great Liberator. The Soviet Government, it was claimed, had a plan which would care for the common man.

Policy and Propaganda

Most governmental planning possesses all the magic of a panacea and the Soviet is the father and master physician in this technique.

The depth of the social cleavages in Europe and the reiterated emphasis on the rights of the common man in all of the Allied pronouncements, placed Russia in a magnetic position, attracting great masses of people who were brought to believe by Moscow-tutored leaders, that the Soviet was their champion, an inspiring, workable and convincing example of government by the proletariat. Long stirring social forces were being crystallized.

We must frankly face the fact that after this latest world convulsion, the Soviet alone managed to maintain a unified, single-purposed, efficiently disciplined front—politically and socially, economically and militarily.

The Soviet ideology was so thoroughly propagandized by its soldiery and officialdom that it encouraged vociferous selected segments of occupied and liberated countries to promote a general transformation of economic life fitted to the Soviet pattern in which these segments had been carefully schooled and indoctrinated. The Communists provided the only ready, vigorous, articulate and often not too scrupulous candidates to undertake the formation of a government or anything resembling a government. To assume that the leftward swing of Europe was a spontaneous movement of the working classes is to overlook entirely the effectiveness of a conveniently avail-

able group of self-seekers willingly submitting to the exacting discipline demanded by the Soviet.

It is a mistake to assume that the dissolution of the Comintern so joyously hailed and widely acclaimed by the Western Press meant the explicit renunciation of any aims at world revolution. Nothing in the official pronouncements of the Soviet supports such an assumption. Indeed Marshall Stalin's recent speeches confirm a sanction of world revolution.

We must face the fact that we frequently pit American Idealism against Russian Realism — a most unequal combat. In Eastern Europe, discussions of the differences between the Russian and the Western concepts of democracy rapidly pass from the academic to the fertile fields of violent conflict.

The history of the Communistic movement clearly shows that it is continuously agitating, educating and organizing mass opinion. In an efficient communistic state, any opposition to it becomes treason and contains the threat of mortal punishment.

Democracy — End or Means?

The sole immediate aim, indeed the very basis of unity of the Western Allies was the complete and decisive defeat of Germany and Japan. That victory was decisive although the margin was slight. However, the Soviet included in their aim, the astute propagation of their own ideology. They coupled it with their military planning and resisted any interference whatsoever even to the extent of rigidly excluding fully accredited Western military observers or war correspondents in their theaters of war, of occupation or of liberation; to a great extent they are still refusing free access of observers or correspondents in the areas they dominate.

After the defeat of Germany and Japan, whatever plans the Western Allies had for Eastern Europe were idyllic, uncertain, or made of such gossamer stuff that the first chilling blast of reality and practical application completely dissipated them. In contrast, the Russians had carefully thought-out, concrete plans, with carefully trained personnel to translate them into positive and immediate action.

There is a pressing need to rescue the doctrines of democracy from the atmosphere of theology. A minimum of economic security is a necessary prerequisite to any real democratic form of government. We object to

Russia's attempt to the exclusive domination of Eastern Europe, but we offered no workable plan in its stead. No people can live in a vacuum.

The Western Allies have emphasized and insisted upon free elections. However, democracy cannot defeat its own procedures. If a free majority decides against a democratic form of government as we know it, democracy as we know it must fail in that country. The causes of such a decision may be transient, but the effects have tenacious life.

Nations learn sorrowfully and ruefully that they cannot exist on schemes of national patrimony unless they submit to totalitarianism



and submerge individual identity in it. It may require some painful lessons for the European people to be again reminded that genuinely democratic systems have sources of faith and energy that cannot be found in any totalitarian ideologies; but learn it they will, however faulty our own example as a Democracy may be.

Europe is still Western at its heart and core and will not permanently or voluntarily forego its heritage. That is its hope and ours.

Much of the Russian intransigence may be a pose of truculence but it has been strikingly effective.

It has been impossible to judge the Russians objectively; but if that is a fault, the onus lies squarely on the Russians themselves. They have persisted in withholding permission to American and British observers and correspondents, not only to report from Russia itself, but from countries liberated with the aid of British and American armies.

A Temporary Colossus

Through its direct-action methods in Central-Eastern Europe the Soviet has used an Allied joint-victory to add some sixty million non-Soviet people to its area of Soviet domination. According to the League of Nations statistics, at present birth rates, the Soviet will soon have more inhabitants than the combined English-speaking countries. That means over 400 million people within its military orbit. It is an incontrovertible fact that the Soviet is aiming at complete militarization and is implementing that aim by training youth from the age of eight up for the Red Army. Marshal Stalin's reported speeches leave no doubt of the permanence and expansion of the Soviet Army.

Perhaps the reason why the Soviet often strikes hard and swiftly is because it is not as restrained by regard for traditions as the Western democracies. It remains inaccessible behind the bulwark of its own thought. It seems to have no taming talisman of respect for other nations opinions. It is imbued with the fires of violent revolution and would like to have itself considered the sole champion of the common man. It is worshipping its own image. It denies the existence of a common world which all humanity shares and which all men helped to create.

More Understanding Needed

Russia's tendency toward isolation is convincing evidence of the fact that Russians are notoriously inept at understanding the psychology of other peoples or other ideologies. They feel that they are always grievously misunderstood by the rest of the world. They would have us believe that they are surrounded by a wall of antagonistic and hostile peoples even when the adjacent nations are staggering from the effects of a devastating war and some of them are almost servile in their homage to the Soviet. Even the relatively remote and strong nations have manifested an amazing amount of good-will. They have demonstrated time and again their

gratitude for Russia's eventual participation in a common cause against a common enemy.

It has been made clear that Russia has become increasingly obsessed with the notion that concessions and conciliations are made only by the weak, the nervous and uncertain, or by those whose future political or

economic existence depends upon whatever military prowess Russia is convinced she alone possesses or should possess.

To the latest generation of Russians, what is not Russian is contemptible; therefore, it presumes that by impressing its own image it is genuinely benefitting the impotent

or benighted.

The truculence of the Russian soldiery, male and female, exhibits this vanity and narcissism with all the bravado of adolescent youth. It leaves more mature nations breathless with astonishment, and at times with shock; but unfortunately, with

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By JOHN W. SNYDER

Director of War Mobilization and Reconversion

A TRIBUTE TO PURCHASING AGENTS . . .

*their Achievements and
their Responsibility*

Message to the Annual Meeting of the
Purchasing Agents Association of
Washington, D. C. March 12, 1946

THERE IS no group of specialists in our business community more directly concerned with the successful functioning of our American system than the purchasing agents.

During the war, the Nation learned it could rely on the experience, skill and initiative of these men and women who, both in and out of uniform, helped make possible the most impressive record of production the world has thus far seen. The high diversification of their training and of the fields of industry and government from which they came, the ingenuity with which they adapted peace-time techniques to the uses of war, their knowledge of the country's resources and materials, the skill with which they worked out new methods of substitution and simplification—all this made the purchasing agents a strategic weapon in the arsenal of democracy.

During the reconversion period, the country again calls upon this group to serve the Nation's interest. It is unnecessary to repeat once again, especially be-

fore a group of men and women who are hourly faced with the problem, that the country faces a serious danger of inflation until the time when supply begins again to catch up with demand. During the next few months inflationary pressure will continue to mount, unless business, labor, and government work together.

A key responsibility for keeping prices down rests with those men and women who daily are competing in the market for the scarce materials needed by the Nation's shops, factories, and business and governmental enterprises. The same ingenuity in substitution and simplification made necessary during the war, close buying, low inventories, careful regard for maintaining the national price structure—these are ways in which the Nation's purchasing agents can make a considerable contribution toward keeping supply in balance with demand until production is once more sufficient to meet the needs of all of us.

less amusement than it once did.

Actually, however, a nation growing and encouraged in strength as the Soviet has been cannot be blamed too much for condemning other strong nations which are reluctant or afraid to use their power in an age of power or to play the game of power in an arena where power seems to be the controlling implement.

Villains of the Piece

The present distatorship in Russia retains its power largely by maximizing the fear of global attack on the Soviet. Any democratic tendencies within Russia would forcibly assert themselves if the fear of external danger was dissipated or proved unreal. These democratic tendencies are denied expression but they prove their existence none the less by the incipient differences among the regional, cultural and industrial components of Russian society. When these differences appear occasionally, notwithstanding the most ruthless repressive measures, the present top officials and the satellites who benefit most by the absolutism of the Soviet regime, resort to defensive measures which are sometimes crude, heavy-handed, precipitate or barbaric; but always thorough and final.

If one thinks about it sufficiently, it is easy to understand why the period of probation for prospective leadership in the Soviet is so long and why the entrenched elements in the Communist Party hierarchy will attempt to defer as long as possible any broad representation of the population. In the constant defense of their authority, the present officialdom must silence any internal criticism by sensationally exploiting alleged foreign dangers. However, the repeated cry of alarm, like the legendary "Wolf! Wolf!" gradually loses reality or effectiveness. It becomes necessary from time to time to resort to provocative attitudes, to develop the "incidents," the deliberate and calculated establishment of differences and opposition, in order to consolidate themselves and their party by means of these external crises from which they heroically and melodramatically extricate themselves at the opportune moment.

In the past, Great Britain, Germany, Japan and Poland have been dramatized by the Russians as instigators of violent Anti-Soviet sentiment and have been assigned the ugly roles of antagonists, encircling Russia in a ring of hostility. The United States is now nominated as

the principal villain in these histrionics. When rising leaders threaten the popularity or tenure of high Soviet officials, the Communist Party is conveniently and drastically "purified" by the liquidation of these "opportunistic" elements.

The performance of the Soviet hierarchy in its many layers evidences a consistency of purpose, which, however repugnant it may be to us, nevertheless has all the advantages of decision and determination. Communism in Russia is an "organization". Communism in Europe is, as yet, a "movement" inspired and dominated by that organization.

The Agreements

For the purposes of this study it is probably desirable to consider the Yalta Plan for Joint Allied Action as the dominant one. Certainly the Yalta formula was the most comprehensive and the one designed to eliminate the disagreements and misunderstandings brought up by the previous agreements, pacts and charters.

In effect the Yalta plan outlined three zones of influence or at least for leadership in action in those zones.

If the American and British Governments evolved a definite policy, it was either unknown, indefinite, or vaguely understood. They appeared to be engaged in a continuous effort and a fruitless struggle to modify the more unacceptable elements in the policies put forward by the Soviet. It was this constant conciliation and compromise which seemed to have brought the Western Governments most of the difficulties they had to face. Not only did they find themselves helpless to assist the Allies for and with whom the war was fought, but they are implicated in the ensuing inevitable "incidents" of Soviet unilateral action.

The absence of definite policy did grave injury to the moral standing of the Western Allies and to their claim to stand for the rights of small nations. One of the most discouraging developments in Europe is the diminution of American prestige.

Concessions and conciliations were again and again made in the hope of eliciting friendly co-operation from Soviet Russia, but if anything of the sort was secured it was not visible from this distance. To all appearances the sacrifices were made in vain, the concessions without purpose. If the object of the policy was closer understanding with Russia, it definitely failed.

When such a policy was faced with such a blank record as this, common prudence demanded that it be reviewed. The United States representatives at UNO appear to have done just that. The aim of any policy towards Russia must be friendship and collaboration, but there may be ways of attaining that aim that will prove more effective than constant concession. The Soviet leaders after all, have the same aims as the American and British—or so most of their speeches about peace constantly proclaim—but their desire for friendly cooperation and peace has not prevented them from using their every advantage to the full, from playing every card for all that it is worth.

Time for Firmness

Perhaps that is what they expected from this side. Perhaps they are genuinely unable to distinguish a willingness to compromise in the interests of wide agreement, from mere weakness and inability to stand firm. Perhaps the best way to win their respect and their friendship is to drive as hard bargains as they do themselves. There has been up to now the greatest reluctance in Washington and London to come to such a conclusion. Hard bargaining with a friend is not customary among the English-speaking peoples. But it would be idle to deny that those who have the responsibility of managing the policies of the Western Allies have been compelled to ask themselves whether they should not have to change their policies in this direction. And it was the policy of the Russians themselves that was the compelling factor in that change. A policy of hard bargaining always has the danger that it might be mistaken for a policy of hostility, and this would be strong argument against it if the alternative policy of concession had in fact achieved any relaxation of suspicion.

Nor is a policy of firmness without difficulty, for one of its obvious requirements is that Americans and British should know exactly what it is that they are going to be firm about.

The alternative is pure drift, securing neither sound and effective policies, nor Russian respect or friendship. It is possible that a policy of hard thought and moral courage will still secure both respect and friendship. The recent pronouncements of the U. S. representatives in UNO is an encouraging sign that it will.

THE BUYER'S **AESOP**



By IRMA FUEHR

THE FABLE OF THE BUYER WHO WAS NEVER CAUGHT NAPPING

ONCE upon a time there was a buyer named Glink, who was Never Caught Napping. He stood over himself like Simon Legree with a whip, and although sometimes the whip was pretty uncomfortable, especially when he would have preferred to go bowling instead of Looking Ahead, he always comforted himself with the exhilarating thought: Nobody ever catches me napping! When he went out for a glass of beer it was only to make friends who might sometime keep him from being c. n. And every month he read through huge forests of technical journals, even those outside his field and so difficult that he couldn't understand them.

At the office his minions looked at him with great respect. "That Glink," they would say. "He is never caught napping. While other plants may have headaches with deliveries and inventories and expediting, we are practically free of such troubles." And once at a meeting his boss said, "That Glink! he's a bright boy. Nobody catches him napping. I will give him a five dollar raise." Which he did. Within a year.

At home his wife looked upon him with awe. "I have a brilliant husband," she'd think, uncomfortably. Glink had proposed to Mrs. Glink when she was on the rebound, and she took him without thinking twice. Sometimes she wished she'd thought three times, or four. Because he was very stern with her about napping. He had her get the storm windows put up in August. Which made the house very hot but fully prepared for the first winter wind. "Look ahead," he said. "Foresee. Order the coal. Lay in a supply of coffee. Run down to the store and buy me a dozen pairs of pajamas" So the house was always running over with evidence of their foresight, and Mrs. Glink found it very hard to run the vacuum around the evidences. But sometimes when Glink was away, Mrs. Glink napped. And so she remained healthy and as content as a woman could be with a non-napping paragon for a husband.

Glink's problem was malleable iron castings. He didn't nap on the job, but he was unfortunate enough to place the order with a seller who Didn't Keep his Promise.

Then one day his boss walked into

the office and said, "Glink, I hear that Whosit Products, our competitor, has got a shipment of malleable iron castings. How come that shipment didn't roll up to our door?"

Glink blushed and twiddled his pencil and looked at the floor.

"You're fired!" roared the boss. "The war is over, so I can again fire people. I'll get myself a really efficient purchasing agent!"

Miserably Glink picked up his marbles and went home. Not once that night did he mention never being caught napping. But then he went to bed, and a terrible thing happened. Much terrier than being fired. Glink couldn't close his eyes! He was too completely conditioned by the habit of not being caught napping.

For a week Glink stared at the ceiling with open eyes. Then Mrs. Glink said, "I don't like to bring this up. But remember the malleable iron castings. Once you were caught napping. If you try hard you may be able to do it again."

Glink tried very hard. Finally he fell asleep.

Moral: Not napping is too napping. And/or: Don't train the boss to expect more than you can deliver.

2

Way



Interpretation Of Free Alongside

THE following case is a good example of two reputable business houses which quarreled over a paltry \$65.00 handling charge because the executives on each side took something for granted. With expanding domestic and foreign markets, purchasing agents must be alert regarding interpretations of sales terms. Not that sellers are deliberately tricky nor that buyers will push unethical, sharp bargains; but both sides must be constantly aware of contract relationships. It is no place for guesswork; nothing should be taken for granted.

To those conversant with export practise or lumber movements by intercoastal vessel, free alongside (f.a.s.) has only one interpretation, namely, that the goods must be placed by the seller at shipside within reach of the cargo hook of the designated vessel. This is accomplished either by lighter, by spotting a railroad car on the apron of the pier, or by trucking the cargo across the terminal in small units.

When a buyer asks for a price "alongside", he expects the seller to move the goods from point of production, if a lumber mill, to a point within reach of ship's tackle, whence it is lowered into the hold or placed on deck. Such a quotation naturally, would be inclusive of all charges incident to moving the goods to the aforementioned pickup place on the wharf.

The point is well illustrated in the following situation which developed between the Soft Pine Lumber Company located in the heart of one of Oregon's yellow pine areas, and Atlantic States Associates, wholesale lumber buyers with branch offices in Pacific coast ports. The names are fictitious, but the problem is a real transaction. The mill ordinarily sells its entire output in the domestic market, shipping by rail and truck. It deviated from its usual practises in the present case by accepting a telegraphic order from the wholesalers for two cars of pine for delivery *Free Alongside* Pier 2, Portland. Date of shipment, prices, discounts, dimensions of lumber and steamer's name were all clearly stated.

What Happened in an Ordinary Transaction When Sales Terms were Not Checked

By ALFRED L. LOMAX

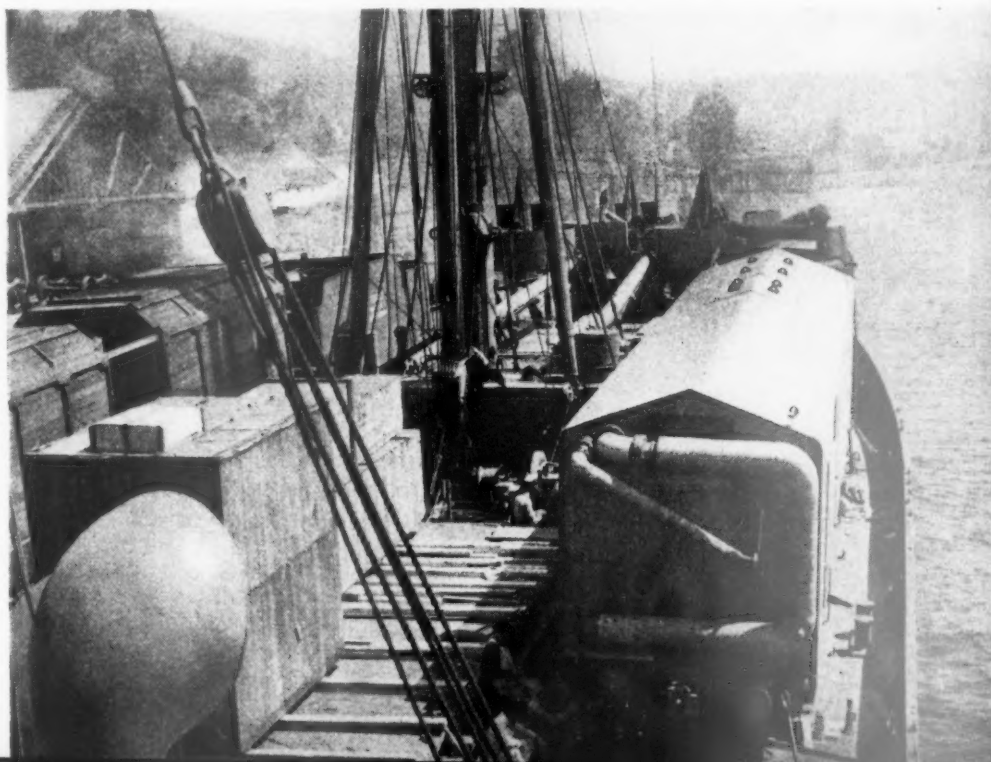
Professor of Business Administration
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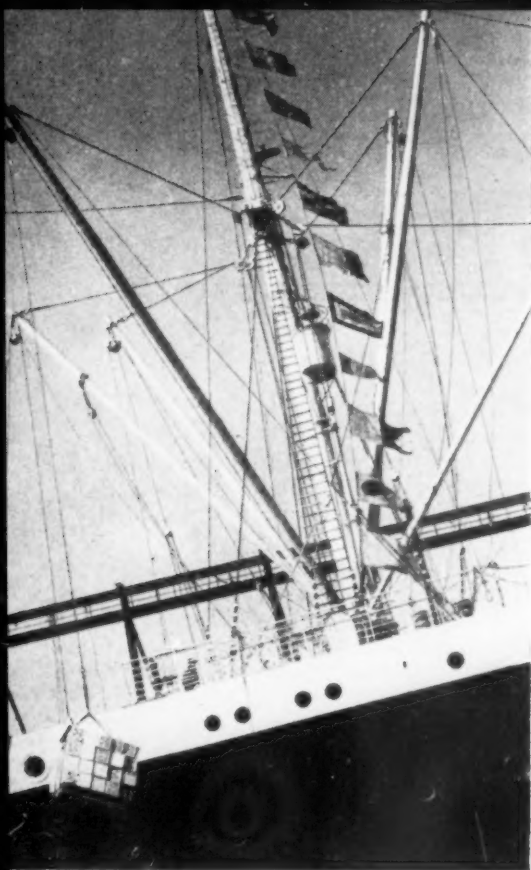
Immediately after receipt of seller's telegraphic acceptance, buyers sent their customary written confirmation containing a restatement of the terms of sale which included the price per thousand feet *F.A.S. Vessel*, Portland. It further stated that the lumber was to be delivered to the pier *Within Reach of Ship's Tackle*, either on open car or lighter, wharfage and handling for *seller's* account. The Soft Pine Lumber Company returned the buyer's confirmation form properly signed, but added in ink at the bottom of the sheet that they were accepting the order according to their own terms stated on their invoice form to be immediately dispatched. This paper contained the usual repetition of dimensions and terms, but with these changes: *F.O.B. Cars*, Pier 2, Portland, wharfage and handling for *buyer's* account.

Correspondence was carried on intermittently until the order was filled, but no mention was made by either party of the apparent variations in terms of sale. Apparently, neither the written order nor the acceptance was checked; if they had been, such obvious deviations from the original stipulations would have been caught.

One month elapsed before buyers made settlement, and when the Soft Pine Lumber Company bookkeeper checked extensions on the memorandum slip, it was found that Atlantic States Associates had deducted wharfage, unloading and handling charges amounting to \$65.00. When the buyer was reminded that the seller had sold "f.o.b. cars, Pier 2, Portland", the reply was that the deal had been closed by telegram on an "f.a.s. vessel, Portland", basis which would naturally include payment of charges by seller incident to getting the lumber to ship's side.

The suppliers, being inlanders and not fully acquainted with terms of oceanshipping, interpreted f.a.s. the pier as being synonymous with f.o.b. cars, Portland, the cars being spotted at the dock and therefore "alongside" the terminal. Furthermore,





their invoice enumerated handling and wharfage for the buyer's account, which should have given the sellers a clue to the possibilities for the misunderstanding which immediately developed.

The question naturally arises, which one of the three papers, the original telegram, the written order or the seller's invoice should govern in interpreting the basis of sale.

As an aid in reaching a sound conclusion, the standard forms of quotations adopted in 1941 by manufacturer's associations, export associations, banks and other organizations to clarify sales terms, are given herewith for f.a.s. and f.o.b. cars, respectively.

"F.A.S. Vessel (named port of shipment)"

Under this term, the seller quotes a price including delivery of the goods alongside overseas vessel and within reach of its loading tackle.

Under this Quotation:
Seller must

- (1) place goods along side vessel or on dock designated and provided by, or for, buyer on the date or within the period fixed; pay any heavy lift charges, where necessary, up to this point;
- (2) provide clean ship's receipt;
- (3) be responsible for any loss or damage, or both, until goods have been delivered along side vessel or on dock;
- (4) render the buyer, at the buy-

er's request and expense, assistance in obtaining the documents issued in the country of origin, or of shipment, or of both, which the buyer may require either for purposes of exportation, or of importation at destination.

Buyer must

- (1) give seller adequate notice of name, sailing date, loading berth of, and delivery time to, the vessel;
- (2) handle all subsequent movement of the goods from along side the vessel:
 - (a) arrange and pay for demurrage or storage charges, or both, in warehouse or on wharf, where necessary;
 - (b) provide and pay for insurance;
 - (c) provide and pay for ocean and other transportation;
- (3) pay report taxes, or other fees or charges, if any, levied because of exportation;
- (4) be responsible for any loss or damage, or both, while the goods are on a lighter or other conveyance along side vessel within reach of its loading tackle, or on the dock awaiting loading, or until loaded on board the vessel, and subsequent thereto;
- (5) pay all costs and charges incurred in obtaining the documents, other than clean dock or ship's receipt, issued in the country of origin, or of shipment, or of both, which may be required either for purposes of exportation, or of importation at destination.

1. Under F.A.S. terms, the obligation to obtain ocean freight space, and marine and war risk insurance, rests with the buyer. Despite this obligation on the part of the buyer, in many trades the seller obtains ocean freight space, and marine and war risk insurance, and provides for shipment on behalf of the buyer. In others, the buyer notifies the seller to make delivery along side a vessel designated by the buyer and the buyer provides his own marine and war risk insurance. Hence, seller and buyer must have an understanding as to whether the buyer will obtain the ocean freight space, and marine and war risk insurance, as is his obligation, or whether the seller agrees to do this for the buyer.

2. For the seller's protection, he should provide in his contract of sale that marine insurance obtained by

the buyer include standard warehouse to warehouse coverage. *F.O.B. (named inland carrier at named point of exportation)*

Under this term, the seller quotes a price including the costs of transportation of the goods to named point of exportation, bearing any loss or damage, or both, incurred up to that point:

Under this quotation:

Seller must

- (1) place goods on, or in, conveyance, or deliver to inland carrier for loading;
- (2) provide clean bill of loading or other transportation receipt, paying all transportation costs from loading point to named point of exportation;
- (3) be responsible for any loss or damage, or, both, until goods have arrived in, or on inland conveyance at the named point of exportation;
- (4) render the buyer, at the buyer's request and expense, assistance in obtaining the documents issued in the country of origin, or of shipment, or of both, which the buyer may require either for purposes of exportation or of importation at destination.

Buyer must

- (1) be responsible for all movement of the goods from inland conveyance at named point of exportation;
- (2) pay export taxes, or other fees or charges, if any, levied because of exportation;
- (3) be responsible for any loss or damage, or both, incurred after goods have arrived in, or on, inland conveyance at the named point of exportation;
- (4) pay all costs and charges incurred in obtaining the documents issued in the country of origin, or of shipment, or of both, which may be required either for purposes of exportation, or of importation at destination."

Although the disputants were apparently not aware of these standard quotations which apply in the main to foreign trade, but with which terminology they were generally familiar, misinterpretations of meaning could not have arisen had the parties had prior agreement concerning them. More to the point, if they had read their contracts carefully the misunderstanding would not have occurred. *Attention to detail* is the price of business success and a defense against business quarrels.



If I Were A Salesman

By W. M. KERRICK

Director of Purchases
The Mengel Company
Louisville

When Bill Kerrick comments, "If I were a salesman—", he poses no hypothetical or academic situation. He is known today as a purchasing man. For thirty-five years he has observed and dealt with salesmen from the buyer's side of the desk. To a very considerable extent, he attributes his success in that position to the fact that he served his business apprenticeship on the sales staff of his company.

He can still do a competent selling job as the occasion demands. His experience in Purchasing Association work—in which, by the way, he has the unique record of serving four terms as National Vice President—is a case in point. His first contact was as a casual visitor at the 1919 convention in Philadelphia. This led to his affiliation with the Indianapolis chapter, the nearest association group then in existence. But he promptly sold the idea to other buyers in Louisville and was instrumental in organizing a strong association in that city. With the "enthusiasm and sincerity" which he advocates in this article, he then extended his "sales territory" to embrace the whole southeastern industrial area. District No. 7 of N. A. P. A., with active chapters in Georgia, Florida, Tennessee, Kentucky, Alabama and Louisiana, is largely the result of his personal salesmanship.

ALL of us must try to visualize what the postwar years have in store for us, and how new conditions will affect our jobs of buying and selling. New products and methods will cascade upon us more than ever before, and the salesman, to hold his own, must be a technician as well as one who calls on the buyers. The salesman who is most completely informed as to the details of the goods he sells, and can most capably impart his knowledge to the buyers, will have a real advantage over his competitor not so well fortified.

This means that the salesman and the buyer will have to work together much more closely than ever before, and it is quite essential for each to have a thorough understanding of the conditions under which the other operates. It would be ideal if every buyer might serve for several years as a salesman, and the salesman as a buyer, but unfortunately few have had the advantage of such an experience.

Sales and purchasing must march together. They cannot separate. They both spring from the same tree—*marketing*—and it is only in the application that they differ. The gulf between the salesman and the buyer is purely imaginary.

Efficient Distribution

The constant complaints of the excessive costs of distribution, so common before the war, will soon again be heard throughout the land, and both the buyer and the seller can do much to collocate in reducing those costs to a reasonable level, and seeing that they do not rise above it. Economy of the time of the salesman and of the purchasing agent is largely within the control of each of

them. Efficient functioning of both groups, and of the individuals comprising these groups, will be insisted on as never before. Each of the groups can advance plenty of suggestions as to how the other can help, and it is to be hoped that there will be opportunities of putting these suggestions prominently before the other group.

Every decade since the turn of the century has brought with it more insistent demands on the abilities, both physical and mental, of the salesman and the purchasing agent. New and higher standards of performance in production and management, born of the urgent needs of war, will be carried over and merged into our peacetime activities. Salesmen and buyers must recognize that there can be no turning back to prewar conditions for any of us. We must measure up to the new demands which will be made upon us, or be brushed aside by the tide of men and women returning from war jobs to peace jobs, in whom initiative, imagination, ability to think, and determination to succeed have been inculcated to a far greater degree than could ever have been the case before the war.

Let us look at the salesman and analyze some of them as we see and meet them today. Let us remember him for what he is. He is as American as apple pie and baked beans. He is the modern version of the Yankee trader and Uncle Sam, rolled into one. He can talk your ear off and still not come up for air, but it is his unquenchable enthusiasm, his zest for life, his terrier persistence and Niagara flow of words which have made him an American institution.

Real salesmen are the salt of the earth, and we like them. They are

sincere, well groomed, well mannered, friendly, courteous, and well informed. They tell you who they are, whom they represent, what their products are, and offer to be of service to you. They are the ones who value your time, who know when to come and when to leave.

It is my opinion that good salesmen are born and not made. Men can be trained in the ethics, procedure, and other routine of their profession, but this is not sufficient. They must have certain qualifications, attributes, temperament, and personality, which is of the man and cannot always be developed or attained through training.

He should have certain authority, the lack of which is one of the most uncontrollable contributors to the waste of time in the selling function. This often makes it necessary for important matters to be referred to the home office through correspondence, often causing misunderstandings and delays. A good salesman must be reliable, tactful, and possess personality and poise. He must be a good sportsman, as nobody cares for a poor loser. Another desirable quality is that of brevity, as more sales are lost by overtalking than by undertalking.

Persistence is another virtue if used wisely, but blind persistence is a waste of time and effort.

A salesman should not always contend that the customer is right. A salesman should be loyal to his company and stand up for his rights if the buyer's demands are not justified.

A star salesman must be ambitious, he must be able to sell under pressure, he must know his business thoroughly, he must survey his prospect's or customer's problems before calling, he must be able to think on his feet and must know how to manage himself, realizing that the big difference between stars and average salesmen is that frequently the star can make a sale in ten minutes which the average salesman takes two hours to close. Our best ambassador of good-will is the salesman who can create good relations and establish a sound and friendly relationship between buyer and seller.

What Buyers Like

A purchasing agent likes a sincere salesman, a man who will not lead him astray and will not misrepresent his product. A purchasing agent likes a salesman who has intelligence about industry in general and particularly about his own product

and how it will fit into a company's production. A purchasing agent likes consideration. If he is extremely busy he would like to have the salesman's story in a nutshell. He likes a salesman who is honest, straightforward, and clean in his habits and dress.

I was much impressed with an item which I saw recently in the *Washington National Review*, and which gives a very good definition of a real salesman:

One who has self-confidence, but does not show it.

One who can be courteous in the face of discourtesy.

One who takes a firm interest in his firm's interests.

One who keeps his word, his temper, and his friends.

One who wins respect by being respectable and respectful.

One who turns up with a smile, and still smiles if he is turned down.



One who understands people and can make himself understood by people.

One who has a steady eye, a steady nerve, a steady tongue, and steady habits.

One who is silent when he has nothing to say, and also when the customer has something to say.

The successful salesman is not one who is indifferent and inflates himself with his self-importance, but is the one who cooperates and uses every effort to help the buyer to secure his requirements as promptly as possible.

Accept Responsibility

One of the most important functions of sales management is to get others to assume responsibility. Any business that is organized into divisions and branches that operate successfully with a minimum of super-

vision and a maximum of responsibility is apt to be found among the leaders in its class.

A high grade salesman is a man who can do his own thinking, work out the details of most of his besetting problems in his own way—without being regimented and hampered by an overdose of rules and regulations. Management sets the selling policies, assigns the method of reports and general procedure, and then it is up to the salesman to build up his territory that it may yield the largest volume of business possible, at reasonable expense, supervising time and energy. There is no need for such men to report to management every time they sneeze. It is not conducive to independence of thought or action to be told just what to do and how to do it all the time. Such may be essential with second rate "order takers" as they cannot build up a business, establish

confidence, or in any sense represent a front line institution.

It is unfortunate that all salesmen are not successful, but this can be attributed in many cases to the man himself, who very clearly shows by his manner and performance that he has by no means studied or learned the real principles and practices of selling.

It was no doubt this type of salesman that prompted Elbert Hubbard to write as appraisal of the "typical salesman" as follows:

The typical salesman is a young man, in good flesh, well dressed, and has an air of prosperity. His face is ruddy, his eyes bright, but there is no sign of intelligence. He is bubbling over with enthusiasm for what he has to sell can say ten words when one would do, but has no sense of time or the value of it, and is without terminal facilities. Unfor-

unately they propagate like rabbits and overproduction is affecting their value. If a salesman could be bought at the appraised value placed on him by a committee of buyers and sold for what the salesman himself thinks he is worth, it would be a most profitable transaction.

Of course this was written in fun, because Mr. Hubbard was a top-notch salesman and it is hardly likely that he would go around knocking the men of his own profession.

A selling organization owes to its market, actual and potential, a fair presentation of the products offered. They should be honestly advertised, carefully and properly made of the ingredients stated, and capable of performing the services they are sold for. The selling people must be capable of displaying, demonstrating, explaining or otherwise presenting

general practice, but are more common than desirable:

Extravagant advertising; poor products; poor salesmanship; lack of authority and knowledge to negotiate sales; failure to service orders to customers; neglect of distribution processes; pulling wires; bartering on reciprocity or chastisement; price fixing by agreement; failure to protect the customer's information; restrictive clauses in agreements.

If I were a Seller

Let us get back to the salesman. What is the buyer going to look for from the salesman in the years ahead?

If I were a salesman contacting industrial buyers, here are some of the things I would try to do:

I would try to *plan my work* before I commenced the day. True, my



to the buyers the products they are endeavoring to sell. They should have accurate and full knowledge of the sales policies, prices and terms of their firm, and should be qualified to negotiate a sale with the buyers on whom they are calling. They should know the ability of their company to perform under a contract. They should keep their outlets fully informed of what they have to offer in products, quality, services and cost. They should give the utmost in service, and strive to better their distribution processes to their customers.

A selling organization operating in any market must be prepared to face the competition existing in that market, and should be willing to win or lose business on a fair basis of equal opportunity.

On the other side of the picture, here are some practices in selling that we also meet. They are not the

schedule might be knocked out of gear long before the day is over, but the buyer can usually tell whether a salesman is working methodically or haphazardly, and is impressed accordingly, for better or worse.

I would try to plan what I *intended to say*, lining up in proper sequence the different points of my sales talk.

I would alter the time-worn admonition "be brief" to "*be concise*", and cover every salient feature in reasonably few words. I would stop when I had finished.

I would *introduce myself* to the buyer clearly and distinctly, even though it be my third or fourth call, or until I had some conclusive indication that the buyer actually knew who I was and what I was selling. I would emphasize the name of my company even more than my own name. When a buyer meets hundreds of men every year, it is easy

for confusion of names and faces to occur.

I would *enunciate clearly*. It is astonishing how many men are merely mumblers, without realizing it. By enunciating clearly, I don't mean shouting or disturbing all others within earshot. I mean speaking distinctly.

I would be *careful of my grammar*. If it is true that a man is known by the company he keeps, it is equally true that a company is known by the men it keeps. A man who says "walkin'", "talkin'", "I done this", usually works for careless people as well as being slovenly himself.

Tact and Punch

I would realize that the *high-pressure salesman* and the chronic backslapper went out of style long ago, and I would let the buyer make the first move in shaking hands. Years ago, the salesman's call partook largely of the nature of a social visit but—unfortunately perhaps—there is not time for that now, and the buyer is favorably impressed by a reasonably businesslike attitude on the part of the salesman. I say reasonably, because all things can be carried to extremes.

I would try to steer a course in my conversation which did not bring me *into sharp conflict* with the views of the man I wanted to do business with. Where he holds an erroneous view, I would try not to flatly contradict him, but would put the facts before him as tactfully as possible. Few things can be more unprofitable than winning an argument with a buyer.

I would try to *bring with me* some article I could talk about—a hacksaw blade, an oil can, a file, or something else in my line which the buyer could take in his hand and focus his attention on. If I were selling heavy machinery, or something else I couldn't carry around with me, I would have a photograph or small model to hand him. There is no more effective way of gaining the whole attention of a buyer than handing him something to examine.

I would never start off with asking, "Do you need anything in my line today?" I would try to be more than an *order taker*.

I would select ordinary, everyday words for my sales talk, yet would try to use words that *carry a punch*, that would lift my sales talk out of the rut of ordinary conversation. Such a presentation, delivered with enthusiasm and sincerity, would

stand a much better chance of attracting and holding buyer's attention.

I would realize that the *mere statement* that "It will save money for you" no longer carries much weight with the buyer. He hears that statement many times each day, every day in the week, and has long since grown impervious to it. I would rather seek to demonstrate the advantages and economies of the article, and let him decide whether it will save money or not.

Fair Dealing

I would try my utmost to see that I worked for a company, and for a sales manager, who operated just as closely as possible under a *one price policy*, where the first price I quoted was also the last one, and the buyer, knowing me and my company, knew it was going to be the last one. Buyers, as a group, have the reputation of being tough—a reputation resulting, in far too many cases, from not being sure that, by haggling, they might not be able to drag out a lower price. Most buyers—I could almost say *all* buyers—want their suppliers to make a profit; but they do not want to buy a commodity at a price quoted by a salesman if a competitor will be able to buy the same commodity from that salesman or from his company at a lower price. The salesman working on the plan of "One price to open up with, and a lower one to close with" soon becomes known, and his progress is usually far from a happy one.

Also, I would carefully *refrain from promising* a delivery date, or anything else, which I was not reasonably sure could be lived up to. It is far better, in the long run, to lose a sale than to make one on the basis of a promise which can not be met. It is human nature to remember something which has caused us inconvenience and embarrassment long after we have forgotten many instances of good service.

I would make sure that my portfolio of catalogues, advertising materials, and price lists was *so arranged* that I could find what I wanted without delay. Too many have to scurry all through their papers two or three times to find what they want, while the buyer sits and waits. I would see that the contents of my bag were indexed in detail, and were in their proper place before I called on the next buyer.

If my sales presentation failed to impress the buyer properly, I would try to keep my exasperation under control. The sneer, the lifted eye-

brow, or anything indicating my conception of a stupid attitude on the part of the buyer should be carefully avoided. The unfavorable impression I leave with the buyer only handicaps me if and when I have occasion to call on him again. A cheerful attitude under temporary adversity is a characteristic of any successful salesman, and will help to impress the buyer favorably.

Every salesman, I suppose, has prospects whom he is unable to sell, in spite of frequent calls over a long period of time. In all probability, such failure is not the result of any lack of ability on the part of the salesman, or his house, or his goods. Sales managers should realize this, and occasionally let the salesman know that they realize it. The sales manager can be tough at times, too.

There are many wheels within wheels in present day business, and quite frequently a buyer is not in a position to divulge the real reason why he doesn't buy from a particular salesman. Most buyers are inclined to stay with suppliers in whom they have confidence, who have given good service, and whose products are satisfactory. On the other hand, it is not always wise to "keep all our eggs in one basket". Do not consider it a personal insult if a buyer doesn't patronize you or your company. You might ask him frankly what, if anything, is the matter. Most buyers will respond with equal frankness to such a request.

I would remember that in the minds of business people it is not the inanimate features—the four walls, the machinery, or even the trade mark—which constitute my company. It is flesh and blood that really make a business organization. The people with whom we come in contact, by their behavior at work and also at play, can build or destroy respect and confidence in their company in our minds. I would try to see that all my activities were conducted in a manner which would add, if possible, to the prestige of my company (and, incidentally, of myself) in the minds of those with whom I come under observation.

The Inquiring Mind

If not born with one, I would try to develop an inquiring mind, particularly in regard to:

(1) The goods I sell. For what purpose are they intended? How are they made? How are they used? How do they work? Can they be used, or adapted for use, on some job other than the one they were intended for? What advantages do

they have over other methods?

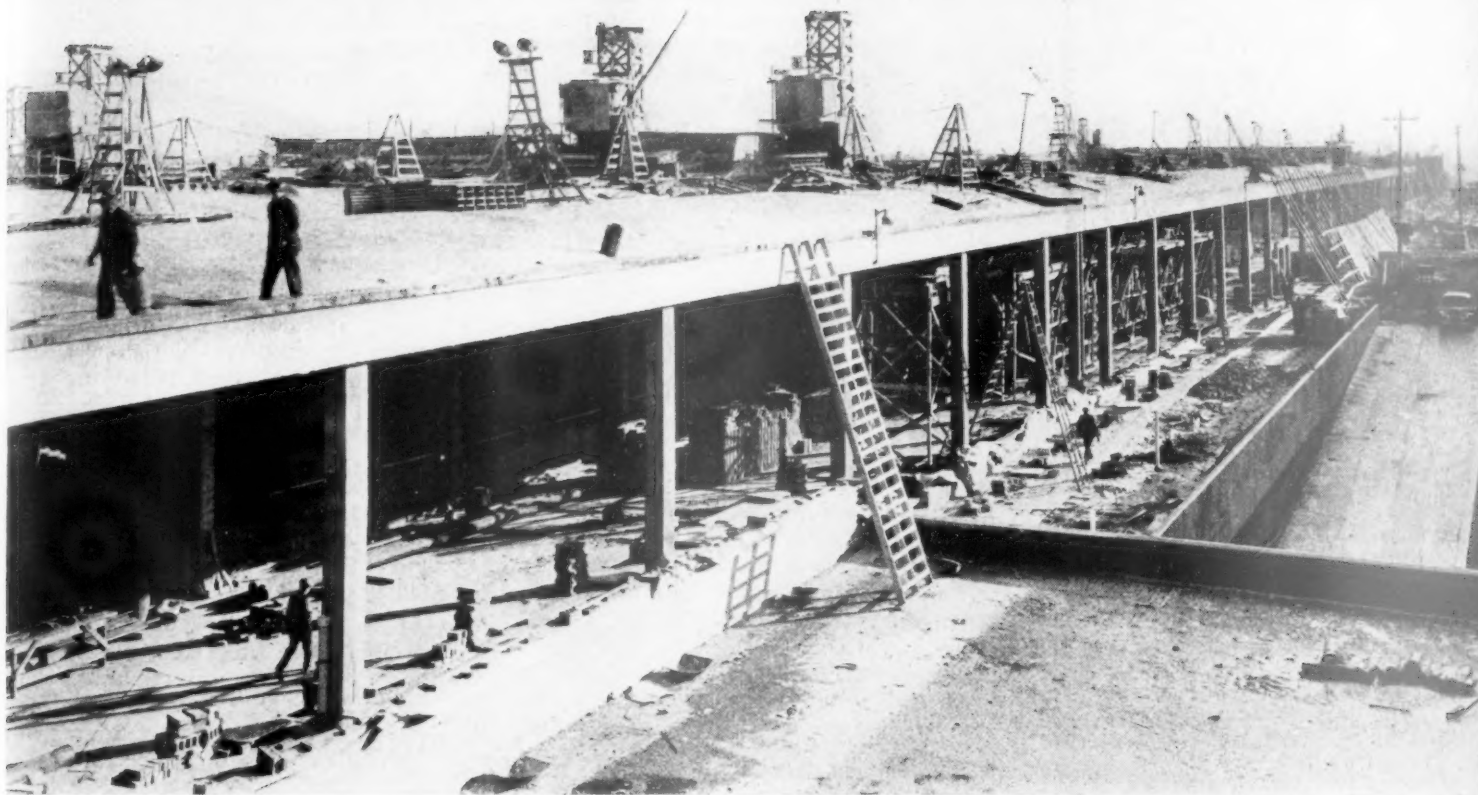
(2) The prospective customer. What is the exact nature of his business and his needs? Is he alive to new ideas, or content to get along with the same old equipment and methods? Is he in a line which may be frozen out by some new product or mechanism? If so, is he aware of this situation and at work on new lines? Is he likely to buy enough to warrant the expenditure of my time and effort? Is he likely to develop, in the reasonably near future, to the point where his business might be a real asset to me and my company?

(3) The buyer for the prospective customer. Am I familiar with his methods of reasoning and his temperamental peculiarities? Methods which seems advisable in dealing with one buyer may be all wrong where someone else is concerned.

(4) Myself. Am I sales minded? When reading the newspapers, listening to the radio, reading trade journals, listening to the conversation of my friends, visiting industrial exhibitions, looking in shop windows and stores, am I alert and eager to apply what I see and hear to furthering my own sales interests and those of my employer?

Regardless, or in spite of, the number of my years of experience as a salesman, I should try to keep always before me the idea that I am still attending school every day, all day—a school whose curriculum comprises courses in applied psychology, engineering, deportment, advertising, credits, business management, and last, but by no means least, in physical fitness. In the years ahead, and salesman or sales manager, or for that matter any purchasing agent, who figures he can coast along, merely on the past reputation of himself, or his goods, or the house he represents, is due for a rude awakening.

As buyers and sellers, in anticipating the many changes which lie before us in the reconversion and postwar periods, it is natural and entirely proper that our primary interest should have to do with the future of our own business. But while we are independent in our own right, we are also interdependent. Working all together, we make up the great institution that is American business. Buying and selling can never be independent of one another. The salesman and purchasing agent must work together for their common good, for the best interests of their respective companies and for business in general.



By **SIDNEY WEINBERGER, A. S. S. E.**

Safety Director
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THE forecasts viewed in the light of blueprints, product of the drafting boards, and construction planning, indicate that the accumulated desire to build is enormous.

One thing is certain in the gigantic program of construction in the period ahead, and that is an increasing demand for manpower.

The construction industry is inherently hazardous, and we can easily visualize an increased toll of industrial accidents unless we are constantly on our guard.

Records of the Department of Labor, in New York State, reveal that construction accidents, in any normal construction year, account for approximately 30% of the total compensation awards.

Variety of Hazards

Accident statistics show that approximately 95% of all accidents are chargeable to unsafe acts, for instance, workers jumping from platforms or climbing down the frame instead of using ladders provided for that purpose, using ladders that are too short, sliding down ropes from one floor to another instead of using

SAFETY IN CONSTRUCTION

American industry faces a prolonged period of active construction, which means a period of abnormally high accident hazard. Foresight is better than hindsight in meeting this condition.

An efficient job is a safe job

safe means of passage, jumping or stepping across floor openings instead of walking around them, removing protective barriers from hoistways, riding material hoists, riding crane loads, walking under suspended leads, working under floor openings, standing on insecure working platforms, using one plank scaffolds, walking across narrow partially suspended beams, throwing concrete boards with protruding nails in work spaces, throwing

boards and other debris on walks, scaffolds and stairways, failure to clean up premises, laying tools on girders, improper use of tools and equipment, use of defective tools and equipment, carrying tools and materials when climbing and descending ladders, failure to shore trenches, failure to heed blasting warnings, incorrect position when lifting, and non-use of protective clothing and equipment required for the particular work or job.

Upon investigation it was ascertained that the unsafe practices of the employees were infrequently associated with accidents in comparison with the frequency of unsafe conditions.

The most frequent single unsafe practice in the operation of machinery is failure to stop a machine before adjusting, repairing or cleaning it. The danger of contact with moving parts has been fully demonstrated by the frequency with which accidents of this type occur. Serious injuries are frequently reported in cleaning conveyors, oiling and cleaning around motor fans and cleaning and working around the skips and blades without first stopping them.

Control Is Essential

In an endeavor to reduce losses occasioned by accidents in construction, the supervisor should exercise rigid control in the transportation, storage and use of inflammables and explosives. Particular caution should be the keynote in the handling and use of this particular phase and more especially while conducting blasting operations.

Special provisions and specific requirements should be made regarding machinery and mechanized equipment peculiar to the construction operations as cranes, hoists, hoistways, hoist towers, hoisting operations, derricks, power excavators, steam and gasoline shovels and woodworking machinery.

A frequent cause of general equipment accidents is a failure to watch, warn or signal workers likely to be endangered in backing, turning,

swinging buckets, lowering mixer skips, and making similar movements. The elimination of such cause should receive positive action on the part of the contractor, and the members of his supervisory staff.

A typical accident occurred when a hoist operator started up without warning a worker on the side of his machine resulting in a crushing injury. In another instance the worker was asked by the operator to make a coupling, and as he stepped between the machines, the operator backed up without receiving a signal, resulting in a crushed and mangled foot.

Safety Requirements

In all projects involving erection, alteration, repair, renovation, or demolition of any building, structure or any excavation work, the basic requirement of the worker is security which means safe working conditions. This condition not only provides for the safety of those workers engaged in the particular construction job, but also protects the public in general.

The State of New York has enacted rules relating to the protection of persons employed in the erection, repair and demolition of buildings and structures.

The Industrial Code No. 23 provides that every person employing or directing another to perform labor of any kind in the erection, alteration, repair, renovation or demolition of any building or structure, or any excavation in connection therewith, shall cause operations to be so arranged, operated and conducted as to give proper protection to the lives, health and safety of all persons employed therein, and frequenting the construction site.

Section 23.1.2.2. provides that no employee shall remove, displace, damage or destroy any safety device or safeguard furnished or provided for his use, or interfere in any way with the use of any method or process adopted for the protection of any person, or fail to neglect to use the safety devices provided, or to follow and obey orders and to do everything reasonably necessary to protect the lives, health and safety of all persons employed therein.

Training in Safety

Training workers to work safely is not an easy task. Merely telling them to be careful is not training them to be safe. You must tell each worker what to be careful of, taking

time to explain the hazards of his job, and exactly how he can avoid them and work safely.

The same factors in handling accidents are not equally important in all industries. For example, handling heavy timbers in certain types of construction work may result in accidents because sufficient help is not provided, or because a group of employees lifting and carrying timber are not properly instructed in the safe way to carry on this activity as a team.

Safety technique and principles must be integrated with operations and not superimposed upon or conducted parallel thereto. Accident prevention must be an integral part of every work assignment with the ultimate objective of every worker developing a skill in coping with hazards equal to that of his craftsmanship.

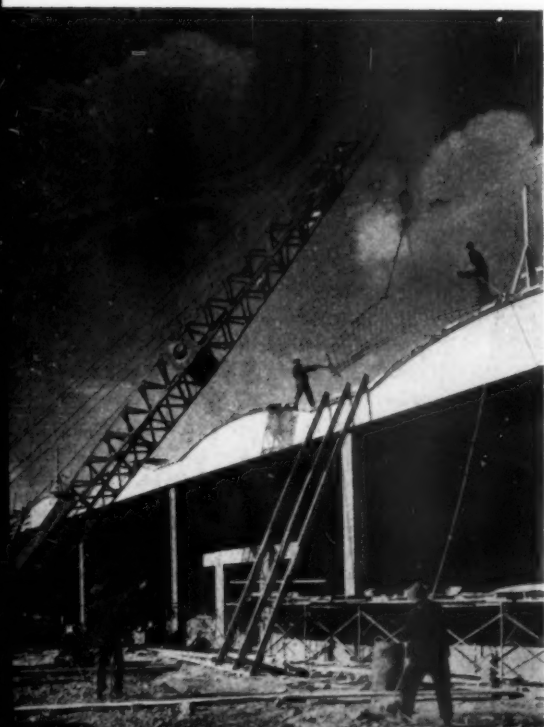
Every practical means must be utilized to eliminate or minimize all accident, fire and health hazards on the construction job. In this situation personal protective devices, equipment and apparel must be provided to each of the workers as the type of work exposure requires.

Plan to Avoid Accidents

Every contractor should have a preproject and a prejob accident prevention plan. This includes a traffic routing plan coordinated with all operations. Proper location of lumber storage and scheduling of materials to provide sequential operations are instances where orderly advance planning produces a maximum of safety instead of confusion.

As the work progresses every special job involving more than routine problems should be planned in advance through coordination of safety engineering design and operation; for example, erection of unusually long and heavy trusses, lifting, moving and setting such objects as heavy bulky tanks, special jacking operations or excavation.

We know of many instances where difficult construction jobs have been completed without damage or injury and these particular records have been established and maintained because of advance planning, diligent supervision and development of safety consciousness on the part of the worker through the efforts of his work leader. Regardless of reasons or excuses for the condition, the fact remains that construction supervisors either do not recognize their responsibility for accident prevention in some instances, or they don't have to know how.



Publicizing the safety program among the employees is one of the most valuable means of encouraging the individual in preventing accidents either to himself or to other workers. Publicity should be planned to include attractive interest arresting bulletin boards, containing effective posters, comparative accident records by departments, messages from the safety director or top management, safety equipment and defective work equipment involved in accidents.

A suggestion system, publicized at the main bulletin board is an effective method of maintaining employee interest, especially when prizes, promotion or other forms of rewards are offered and given to any of the employees submitting acceptable suggestions.

Following Through

We must consider the general plant layout for the convenient and safe movement of the worker and material in anticipation of any construction, remodeling or adopting any plant, building and structure to operation. We should check all plans and specifications for safety.

Inspection must begin at the time that excavation is begun, through laying of the foundation, erection of the exterior structural steel, enclosure of the structure, completion of the interior and in the provision for mechanical equipment installed in the building.

Before excavating or doing any similar work which may effect the safety or ability of any structure, the constructor should inspect all existing conditions. During the excavating operations every precaution must be taken to prevent any movement settlement or weakening of the structure.

Where there is reason to believe that an adjacent structure is unsafe, no further excavating must be performed unless, shoring, bracing, sheetpiling or some means of insuring the stability of the adjacent wall is taken, to prevent it from collapsing.

That portion of every excavation which is adjacent to a public thoroughfare or walkway must be provided with a substantial fence, railing or enclosure so constructed as to prevent persons from falling into the excavation.

Equipment Considerations

All equipment used in construction or demolition work must be checked not only to ascertain that the equipment in itself must be of

sufficient capacity for the purpose, but also that the equipment is so guarded and used as not to endanger the worker.

The equipment in the construction industry varies widely and includes the use of different machines ranging in size from the small hand tool to pile driving rigs and equipment used for driving piles in construction operations. Much of the machinery is concerned with the handling of material and which would include for instance, the wheel barrow, the material hoist, the derrick, the crane, the steam shovel or material chutes and must be guarded against for inherent defects and—or dangerous operations.

Derricks must be so constructed, erected and operated so that no part shall be stressed beyond the working strength or capacity for which it is designed. Before erection, all blocks, shackles, sheaves and the various devices on the mast and boom must be thoroughly inspected. The booms and mast of every derrick and crane must be properly grounded against possible accidental contact with high tension lines.

Demolition Problems

Before starting demolition work, all gas, electric, water, steam or other supply lines must be shut off and capped at the building line or curb. Where it is necessary to maintain any power, water, gas or electric lines during demolition, such lines must be protected with substantial coverings necessary to protect them from falling material and to afford safety to the workers.

When properly planned, demolition proceeds in a systematic manner and the work on the upper stories is completed before any of the supporting members of the lower stories are disturbed. Masonry should not be loosened or permitted to fall in such masses upon the floors of the building to exceed the safe carrying capacity of such floors. Safety demands that no wall, chimney or other structural part be left in such condition that it may topple over due to wind or vibration.

Protecting the Public

If the building to be demolished is adjacent to a public thoroughfare where persons are permitted to pass, a substantial barricade or sidewalk shed must be erected. This bridge is used for the protection of pedestrians on the sidewalk. Regardless of the type of work, all members of the structure must be braced and connected to resist displacement or distortion of the framework. It is



customary to make the shed of sufficient width to permit the use of a full width of the existing sidewalk except for the necessary space occupied by the post and sills. In any event the width should be sufficient to accommodate normal traffic without congestion.

Hazards of Drilling

Rock drilling operations should be conducted with exhaust systems to remove dangerous silica dust. Dust removal equipment not only protects the drill operator, but also has the advantage of increasing production since the removal of the dust speeds drilling.

Since drilling into rock involves silicosis, the dry air suction method of silica dust control prevents the injurious silica dust from reaching the lungs of the workers, thereby protecting them from the lodging of dust particles causing a growth of scar tissues which leads eventually to tuberculosis.

Rock drilling workers should be educated in the correct use of dust control equipment, and should be constantly reminded that silicosis develops from consistent breathing of the silica dust usually encountered in hard rock.

Silicosis occurs mainly where the dust is of a high silica content, usually found in hard rock such as granite and sandstone, and where the rock formation has free silicon dioxide as a component part of more than 10% by weight, and a dust concentration of more than 10,000,000 particles per cubic foot of air.

A problem common to construction, encountered in tunnelling op-

(Continued on page 384)

BUYING POLICIES DETERMINE MARKETING PROGRAMS

By DONALD WILHELM, JR.

Economic Advisor
Bureau of Foreign and Domestic Commerce
Washington

The Bureau of Foreign and Domestic Commerce is preparing a marketing guide for the hundreds of small and large concerns that are now preparing to introduce new industrial-type products. It includes a check list to aid both manufacturers and distributors in identifying and solving the problems likely to be encountered in launching such a program.

Just as Purchasing Agents constantly study their sources of supply, their habits and practices in turn should be studied by their suppliers. This is Mr. Wilhelm's advice to prospective marketers. Sections of the check list, presented herewith, will be of value to Purchasing Agents in an analysis of their own function and performance.

I. BUYING HABITS

WHEN a businessman says he is "experienced in marketing a certain line of products, one of the main things he means is that he knows on a first-hand basis the various trade practices in that particular line. For marketing pig iron is different from marketing agricultural machinery. Marketing used machine tools is different from marketing new ones. Marketing hacksaw blades for power hack-saws is different from marketing them for hand hack-saws.

Whether buying habits in the field of a new product seem reasonable or (as in the case of some trade discount practices) clumsy and awkward, they must be taken into account. To overlook some simple point like a trade discount schedule might mean the loss of half of the potential sales volume.

1. Are products of this type usually bought by users for cash, on open-account credit, or on a time payment plan?
2. Will the product sell evenly throughout the year or (as with truck tire chains) will the bulk of sales be concentrated in one or more seasons?
3. If seasonally, when will the immediate customers buy? If the immediate customer is not the final user, when will users buy?
4. Is there any way to level out seasonal fluctuations in sales by balancing sales to different groups of purchasers?
5. Are purchasers of this type of product

accustomed to buying it ahead of need or do they tend to place spot orders for immediate shipment?

6. Will some purchasers of the new product (for example: chain stores, mail order houses, Federal, State or local governmental units) buy only on the basis of unusual technical specifications or other special buying procedures? If so, can you meet their requirements?
7. Are the potential users of the product accustomed to relying on trade names or firm names, or do they buy mainly

on the basis of technical specifications?

- a. If they buy mainly according to firm names, do you have established names that you can sell under?
 - b. If they buy mainly according to technical specifications, will the product meet such specifications, and has your staff adequate knowledge and experience in doing business on these terms?
8. Do major users or distributors of the product buy in the open market at established prices, or do they place special orders with manufacturers for large-lot production, or do they use both methods depending upon circumstances?

II. WHAT ABOUT COMPETITION?

AS a new product is placed upon the market, it will face competition from many directions. For example, you may think your new product is the last word in modern design, yet some competitor may turn up with something better. Likewise your production methods, while good, may not be so good as the other fellow's. Again, competitors may enjoy access to cheap credit which will help them cut their costs below yours. Or they may distribute their product more efficiently.

Smaller companies are particularly apt to neglect the product design side and the marketing side of

effective competition. Always remember that no matter how well designed a new product may be, somebody may improve on it in time. You had better be the one who does the improving, or competition will hit you hard. Likewise, remember that a competitor may do such a job of putting his product before potential buyers that his sales will outstrip yours even if his product is engineered not quite so well as yours.

On the engineering side, the best defense is a technical offense. No matter how unique you may think your new product is, you cannot rest on your technical oars or find permanent shelter behind patents. Par-

ticularly if you operate a small business and cannot rely on large established laboratories of your own, you had better set aside a certain percentage of profits on the new product for the sole purpose of doing research to help you maintain and increase whatever engineering advantages your product now enjoys. Plan short-term, medium-term, and long-range research programs to keep your product in the forefront. Industrial history is littered with examples of small companies that started out prosperously with a product that was technically supreme in its field, only to let competitors strangle them through research that undermined all the product's original competitive advantage.

1. What firms make products that will compete with your product?
2. Briefly, what advantage has each competitor over your company?
3. What is the reputation of leading competitive firms and products?
4. Do you know of competitors or potential competitors who are likely to enter the field with similar products. Do they have enough technical or marketing skill that they may develop a better product or market it better?
5. Can anybody bring out a seriously competitive item quickly?
 - a. Do you have basic patents that would reduce the likelihood of sudden and unexpected competition?
 - b. Are there engineering or other factors that would reduce the possibility of unexpected competition?
6. To what extent do "unrelated" products indirectly compete with the new product? (For example, domestic washing machines indirectly compete with commercial laundry equipment.)
7. Do past, present and prospective technological developments give any indication of whether this indirect competition will increase in the future?
8. Are changes in materials or methods likely to reduce the need for your product?
9. Are changes in materials or methods likely to increase your present competitors' sales at the expense of your own?
10. Have you discussed with your engineering staff all important past, current, and prospective technological trends that may effect your competitive situation?
11. Is your name and reputation already established, in the minds of the people who will distribute your product and those who will use it, with respect to similar products you already make, a general reputation for quality and progressiveness, and a general reputation for dependability, stability, honesty and fair dealing?
12. In the light of your own standing or lack of standing in the market for the new product, is it best to trade on your company name in introducing the product, or would it be easier and more satisfactory to build up a separate name for the product itself?
13. Can your product compete favorably

with similar products on the market as to (a) price, (b) quality, (c) performance, (d) finish and appearance, (e) durability, (f) length of service guarantee, (g) other guarantees, (h) packaging design and method, and (i) other pertinent factors?

14. Has your product received controlled engineering performance tests side by side with the products of competitors?
15. What unique operating advantages, if any, can you claim for your product over those of your competitors? (For example, does it turn out work faster, or is it a multi-purpose piece of equipment that can be used for more different operations, or does it require less skill to run? Concisely list all undeniable points of superiority.)
16. What other advantages, if any, can

you claim for your product as against those of your competitors? (For example, is its first cost less, or does it require less floor space, or is it designed to be serviced with standard rather than special tools?)

17. Do customers buy competitive products mainly on the strength of (a) technical specifications, (b) reputation of the company, (c) reputation of the brand or trade name, or (d) other factors (for example, reciprocal sales relations, company affiliations, personal friendships, etc.)?
18. If you cannot match certain special services provided by competitors, can you provide equal value by quoting lower prices or otherwise? If, so, will customers be satisfied? (Note that in practice, buyers are often unwilling to substitute a lower price for special services.)

III. PRICE POLICIES

IT is obvious that the price (both to distributors and to final users) of a new product must be in line with competitors' prices for comparable quality, service, and performance. Discounts, allowances, and similar factors must also have some relation to established practices in the field. This requires a knowledge of pricing structures as well as other trade practices and customs in the field of the new product.

In order to get a new product introduced to distributors and users, it may be necessary to set up a liberal system of discounts and allowances. But bear in mind that many a manufacturer has run aground on overgenerous discounts which he could not easily abandon.

Here are three important principles in setting a price policy:

1. Be sure that the scale of prices, discounts and allowances is in line with long-standing trade practices.
2. Be sure that discounts and allowances are such that everybody who plays a part in distributing the product not only can, but in practice will, make a satisfactory net profit.
3. Be sure that prices to different types of distributors, as well as the promotional and other help given to each type, do not permit some distributors to compete unfairly with others. Discrimination between distributors is not only unfair but illegal. Federal and State anti-price-discrimination statutes prohibit any discrimination between individual distributors or other buyers. These laws do not prohibit quantity discounts or similar concessions, but they require that such concessions be on an equal basis to all qualified

distributors.

1. Do you know, in general, what your price policy will be on this product?
2. Have you figured your profit margin as accurately as possible?
3. Have you clearly decided whether you want to follow a big-volume-small-margin price policy or a small-volume-big-margin price policy?
4. If in your price policy you are shooting at a relatively limited group of prospects, have you estimated the total potential sales field with this in mind?
5. Are you sure your price policy will meet the requirements of all logical prospects.
6. Have you considered insurance costs as well as costs of manufacture and selling in determining the price?
7. Have you considered all transportation costs, including basic rates, yard and switching charges, if any, and other handling costs?
8. Have you considered packaging and packing costs?
9. How will installation costs, if any, affect the price policies of you and your distributors?
10. Will you service or help service the product? If so, will the user pay you directly for the service?
11. Will you expect distributors to help service the product?
12. How will performance guarantees, if any, affect your costs and prices and those of your distributors?
13. Will you sell spare parts at cost or at a profit?
14. Have you worked out a complete factory price schedule for spare parts?
15. If distributors will also handle spare parts for the product, have you worked out spare parts price schedules for sales to them and suggested prices for resale to users?
16. Have you decided what classes of customers will be entitled to trade discounts?
17. Have you determined the schedule of trade discounts to (a) distributors, and (b) users to whom you may sell direct?
18. Will you offer a cash discount?

QUALITY and COST

By **L. E. COVEY**
Purchasing Agent
Victor Adding Machine Company
Chicago

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ORIGINAL PURCHASE ORDER

DUE TO TERMS AND CONDITIONS ON THE REVERSE SIDE

Unless otherwise specified, any increase in the quantities called for in this purchase order are exceeding \$ per unit will be accepted as compliance with this purchase order, when caused by conditions of loading, shipping, packing or otherwise in manufacturing processes and payment shall be adjusted accordingly.

VICTOR ADDING MACHINE CO.

3900 N. ROCKWELL ST., CHICAGO 18, ILLINOIS
KEYSTONE 8210

RENDER INVOICES IN SINGULAR

ON ALL SHIPPING PAPERS
(INVOICES & PACKAGES SHOW)

ORDER NO.

SHIP TO

TO

REQUISITION TO PURCHASING DIVISION

No. 58039

ORDER DATE DATE AT DESTINATION TERMS F.O.B.

QUANTITY

DESCRIPTION

DATE

ACCT NO

AUDITED BY

RESERVED FOR PURCHASING

IDENTIFICATION

ORDER FROM

PART NUMBER

FOR PART NUMBER

STREET

DATE REQUIRED

TOOL OR MACH NO

CITY

BLUE PRINT REVISION

SERIAL NUMBER

TERMS

DATE ORDERED

DELIVER TO

F.O.B.

SHIP VIA

W.C. NO.

CANCEL ☐

CHANGE ☐

PURCHASE ORDER NO.

PURCHASE ORDER NO.

QUANTITY

UNIT

COMPLETE DESCRIPTION OF ITEMS

PRICE

UNIT

DISCOUNT

1

- PRIORITY INFORMATION -

RECEIVED BY PURCHASING DIVISION

REQUISITIONED BY

PREFERENCE RATING

APPROVED BY

C. H. P. NO.

AUTHORIZED BY

CONTRACT NO.

DEPT. NO.

END USE

CHECKED BY

BY

PRIORITY DIVISION

INSTRUCTIONS - DATE DEPARTURE FROM
SHIPPING POINT DIFFERENT CHARACTER BY ITEM.
RETURN GREEN COPY FOR YOUR FILE.

BUYER

REQ. NO.

BY

BUYER

QUOTE

MATERIAL SUBJECT 100% INSPECTION VICTOR ADDING MACHINE CO.

DIRECTION OF PACKAGES

BY

FORM NO. 101-2

REQUEST FOR QUOTATION
VICTOR ADDING MACHINE CO.
 3900 N. ROCKWELL ST
 CHICAGO 18, ILL.

To

DATE

PREFERENCE RATING QUOTATION DUE JOB NO REPLY TO

QUANTITY PART NO. DESCRIPTION

TERMS DELIVERY

IMPORTANT: IF YOU ARE UNABLE TO QUOTE, ADVISE US TO THAT EFFECT IMMEDIATELY.

NOTE: SUBMIT FORMAL QUOTATION ON THIS FORM
 RETAIN DUPLICATE FOR YOUR RECORDS

B11-23 NP

CO.

BY

A close check is kept on current markets by the use of a Request for Quotation on major procurements. The quotations are tabulated as shown on the next page.

AMT. DISPOSITION REFERENCE

CHARGE DEPT. NO. LAST OPER. FIN. **INSPECTION REPORT** SERIAL NO. PART OR TOOL NO.
 331-233 **45441**

WORK FOUND TO BE DEFECTIVE ON FACTORY WORK ORDER NUMBER— VENDOR DATE PUR. ORDER NO.

QUAN. RECEIVED QUAN. INSPECTED QTY. REJECTED REC. REPORT OR LOT NO. PART OR TOOL NAME

TALLY NO.

PRODUCTION CONTROL NEEDS PIECES PER PLANNER
 DEFECTS

INSPECTED BY APPROVED BY POSTED BY DATE
 CLOCK NO. INITIAL INITIAL

The Inspection Report is made out in six copies, the last copy being on index card stock suitable for filing as a permanent record in a 4 x 6 file. The reverse side of Copy 3 is ruled to show amount and disposition of any rejected material.

The disposition of rejected material—whether by return to vendor or by scrapping; whether because of defective material or workmanship, or because of obsolescence; and whether chargeable to vendor, factory, engineering, purchasing, or sales—is recorded on a six-part form. Copy 1 goes to Production Control; Copy 2 to Chief Inspector; Copy 3 to Cost Department; Copy 4 to Purchasing or Subcontracting; Copy 5 to Disposition Engineer; and Copy 6, on heavy manila index, remains with the parts or material.

CHARGE DEPT. LAST OPER. FIN. **DISPOSITION REJECTED MATERIAL** SERIAL NUMBER PART NO.
 37813

FOR COST DEPARTMENT USE ONLY FROM INSP. REPORT NO. DATE AMOUNT DISPOSED OF
 MAT'L. WOLB. MATERIAL LABOR BURDEN NO. OF PIECES REJECTED ON ABOVE REPORT PART NAME

TOTAL DISPOSITION REASON CHARGE
 RETURN SCRAP DEF. MAT'L DEF. WORK HANDLING OBSOLETE VENDOR FACTORY ENGR. PURCH. SALES
 P. O. NUMBER VENDOR REJECTED FOR:
 R. R. NUMBER
 R. R. DATE

SIGNATURES FACTORY WORK ORDER NO. LOT NO. DISPOSITION ENGINEER POSTED BY DATE

PRODUCTION CONTROL DEPT.

331-234

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PURCHASING

Guarantees



PROTECT THE BUYER

Sellers' warranties on materials and equipment safeguard the interests of the buyer, but care must be taken to insure that the warranties will apply

By LEO T. PARKER

BUYERS who understand elementary principles of law always may profit by guarantees given by sellers. This is so because both expressed and implied warranties are intended to benefit purchasers.

On the other hand, before a purchaser refuses to pay for merchandise, or files a suit to recover damages from a seller for breach of a warranty, he should be *certain* that he can introduce testimony which will convince the court that the seller is "in the wrong". Otherwise, it is useless to defend or instigate a suit based on a seller's warranty.

For illustration, in *Sherwin-Williams Company vs. O'Hara Decorating Service, Inc.*, 152 Fed. (2d) 156, reported January, 1946, the testimony showed that a buyer purchased enamel and linseed oil for use as ingredients to make varnish, but he did not test either of them. The buyer refused to pay the contract price of \$7,442 on the contention that the varnish was practically worthless because of a defect in either the enamel or linseed oil. The seller sued the buyer to recover the contract price and the latter filed a counter suit and asked the court to allow it the sum of \$12,513.56 as damage which it sustained by reason of a breach of warranty on the part of the seller as to the quality of the goods which it had sold and delivered.

The buyer failed to prove that either the enamel or linseed oil was defective. Therefore, the higher court held the seller entitled to re-

cover the full contract price from the buyer, and refused to allow the latter any damages.

Another important law is that if a written contract of sale is not ambiguous, and therefore the intentions of the parties are readily ascertainable, both the buyer and seller may expect *only* a verdict strictly based upon the contents of the written contract. In other words, testimony of oral promises and guarantees which contradict a written contract will not be considered by any courts when deciding a legal controversy between a buyer and seller.

For example, in *Goldstein v. Welded Products Company*, 164 Pac. (2d) 229, reported February, 1946, the testimony proved conclusively that a buyer and seller entered into a written contract whereby the latter agreed to furnish the materials for a baling press for the sum of \$3,500. The contract contained the following express warranty:

"The first party (seller) guarantees that said press will have sufficient power to compress light sheet metal scraps to bundle size of a maximum of 14 x 18 x 24. First party also warrants said press against any defects caused by defective workmanship."

The purchaser refused to pay the agreed price on the contention that the workmanship was defective, and that it was not suitable to perform the ordinary work for which it was made and constructed and that numerous breakdowns occurred. The

seller sued the purchaser to recover the full contract price.

During the trial the seller proved that the press would compress and bale "light sheet metal scraps to bundle size 14 inches by 18 inches by 24 inches" as stated in the written contract, and that the breakdowns were not caused or in any manner due to defective workmanship.

The purchaser attempted to prove that, in addition to the guarantees in the written contract, the seller had verbally guaranteed that the press would produce a standard size bale of scrap metal at a minimum of twenty tons per eight hour day,



or a total of forty tons in sixteen hours per day. It was admitted that the press would not accomplish this amount of work. Therefore, if this guarantee had been inserted in the written contract there is no doubt but that the purchaser may have been entitled to refuse to pay for the press on the grounds that the seller had breached the contract. However, the higher court refused to

THE PROTECTION OF SELLERS' WARRANTIES CAN BE VOIDED BY THE BUYER

- ...by failing to get the guarantee in writing.
- ...by failing to be specific in respect of the qualities or conditions which the guarantee covers.
- ...by failing to require that the warranty shall apply after shipment and installation of equipment.
- ...by failing to test materials which are later incorporated in the product, losing their individual identity.
- ...by failing to prove actual financial losses resulting from seller's breach of warranty.
- ...by failing to carry out his own obligations under the contract.
- ...by continuing to use equipment or materials after breach of warranty has been claimed.
- ...by continuing to accept deliveries after the seller has broken his delivery promises.

listen or consider this alleged verbal guarantee and held the purchaser liable for full payment. This court said:

"The purpose for which the press was to be constructed and the work it was intended to perform is clearly and distinctly set forth in the written contract. . . . Defendants (purchaser) by the offered evidence sought to prove that prior to the execution of the written contract oral representations and statements were made by Mr. Tucker whereby plaintiff (seller) agreed to construct a press materially different from the press mentioned and described in the written contract. The evidence offered tended to vary, contradict and impeach the terms of the written contract. It was therefore inadmissible."

Written Contract Governs

And again see *Silver v. Bow*, 157 Pac. (2d) 785, reported June, 1945, where it was shown that a seller sold a used machine under a written contract of sale which contained a clause that it was accepted by the purchaser without warranty.

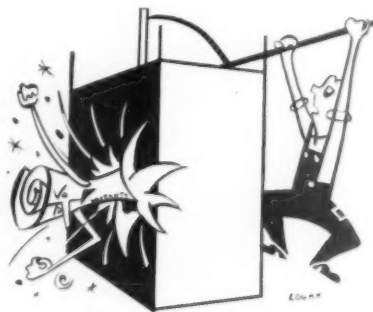
Later the buyer attempted to testify that the seller's salesman verbally guaranteed the machine. However, the court refused to listen to the verbal promises allegedly made by the salesman.

Also, see the leading case of *Thompson v. E. W. Jones, Inc.*, 118 P. (2d) 196. This court said:

"The execution of a contract in writing, whether or not the law requires it to be written, supersedes all oral negotiations or stipulations concerning its matter in the absence of accident, fraud or mistake, and any representation made prior to or contemporaneous with the execution of the written contract is inadmissible to contradict, change, or

add to the terms plainly incorporated into and made part of the written contract."

Thus, while testimony of verbal agreements which contradict a written contract cannot be used as evi-



dence, the law is different with respect to verbal agreements which prove an accident, fraud, or mistake.

In other words, although an unambiguous written contract is between a buyer and seller, either party may use verbal testimony to prove that the other performed fraudulent acts, or a mistake existed, or an accident happened which interfered with fulfillment of the obligations assumed in the written contract.

Fraudulent Statements

See *Carpenter*, 163 S. W. (2d) 735, where a contract of sale contained a clause to the effect that the seller gave no guarantee as to the quality of the merchandise.

Notwithstanding this clause the higher court held the seller liable for making a fraudulent statement, regarding its quality, which induced the purchaser to sign the contract.

Of course, as previously explained in these pages, the mere fact that a seller states that his merchandise is "good quality", or "as good or better" than merchandise sold by his competitor, or like state-

ments, are not considered by the courts as being fraudulent statements. But where a seller falsely and verbally promises, for example, that he will advertise the product, or assist the purchaser to dispose of the merchandise, or grossly exaggerates its quality, these statements are fraudulent and the purchaser may introduce them as testimony to vary or contradict the terms of a written contract.

The higher court rendered an important decision in *Meske v. Wenzel*, 20 N. W. (2d) 654, reported January, 1945. This court held that fraudulent representations of a seller gives the buyer a right to elect whether to rescind the contract or to keep the merchandise and recover damages. This court held further that if the buyer decides to sue for damages he may recover the difference between the value of the merchandise purchased, as it was, and what it would have been had merchandise been as represented.

Buyer Sues for Profit

Considerable discussion has arisen from time to time, over the legal question: If a seller breaches a warranty for merchandise sold to a purchaser, can the latter sue and recover from the seller the profit he would have earned on resale of the merchandise? The answer is in the affirmative. This is so because the measure of damages collectable by a purchaser for breach of warranty is the loss directly and naturally resulting, in the ordinary course of events, from the breach of warranty.

For illustration, in *Norry v. Electric Arc, Inc.*, 45 Atl. (2d) 185, reported February, 1946, it was shown that a seller sold a generator that was guaranteed to a performance of 900 revolutions per minute, at a volt efficiency of 70 to 110. Further, the seller knew that the buyer intended to sell it to the latter's customer.

After the generator was used by the customer for a considerable period, the inefficiency of the generator was proved. The customer



returned the generator to the original buyer who sent it back to the seller and brought suit for the price paid to the seller plus a profit on the resale.

In holding the seller fully liable, the higher court said:

"It was the vendee's (purchaser's) right in these circumstances to rescind the contract, recover the purchase price in full, as well as its profit which was lost by the seller's default. This latter item was a loss that resulted 'directly and naturally' from the breach of warranty. . . ."

Must Prove Damages

On the other hand, although a purchaser is defrauded he can recover damages from the seller *only* the amount of damages he positively proves.

For illustration, in *Moran v. Levin*, 63 N. E. (2d) 334, reported January, 1946, a purchaser alleged that a seller defrauded him by misrepresenting the quality of the subject of the sale. He sued the seller for damages, but failed to prove any financial losses resulting from fraud of the seller. The higher court refused to hold the seller liable, and said:

"A plaintiff (purchaser) does not make out a case in an action for deceit or fraud unless he furnishes a rational and adequate basis for the ascertainment and assessment of the actual damage that resulted from the defendant's (seller's) fraud."

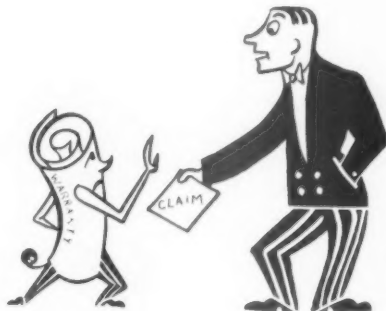


And, also, see *Schaefer v. Fiedler*, 63 N. E. (2d) 310, where the higher court held that a buyer cannot "pile up" damage by continuing to use an article when he knows that damage will be the result.

In this case it was shown that a purchaser of machinery discovered within a few days after accepting the delivery that the machinery would not perform according to the guarantee given by the seller. However, the buyer continued to use the machinery and later sued the seller to recover all damages he sustained resulting from breach of the guarantee.

The higher court refused to allow the purchaser any damages, saying:

"The evidence is that after appellee (purchaser) knew that the machine would not work satisfac-



torily he nevertheless proceeded to use it. . . . But this loss was not the natural and proximate consequence of the breach of warranty. It was entirely due to the fact that appellee voluntarily used the machine after he knew that it would not work satisfactorily."

Also, this higher court explained another interesting point of law, as follows:

"In the case of breach of warranty of quality, such loss, in the absence of special circumstances showing proximate damage of a greater amount, is the difference between the value of the goods at the time of delivery to the buyer and the value they would have had if they had answered to the warranty."

Obviously, the real legal meaning of this explanation is that where a seller sells merchandise for a particular use, the allowable damages for breach of warranty are *not* confined to the difference between the actual value when delivered and the value as warranted, but include all such consequential damages as are the direct, immediate and probable result of the breach.

Must Comply with Contract

Generally speaking, either party to a valid contract may file a suit and the court will, when justice is served, order the other party to comply with the terms of the contract.

For illustration, in *Silver Hill Company v. Carozza Corporation*, 40 Atl. (2d) 311, reported 1945, it was shown that a purchaser breached a contract in that it refused to render the monthly statements and condition of merchandise, as agreed in the contract. The seller sued and asked the court to order the purchaser to comply with the contract. In holding in favor of the seller the higher court said:

"In the case at bar there was an express promise to keep all records and account monthly."

Obviously, this seller could have recovered damages from the purchaser for breach of the contract, instead of asking the court to compel the purchaser to comply with the terms of the contract.

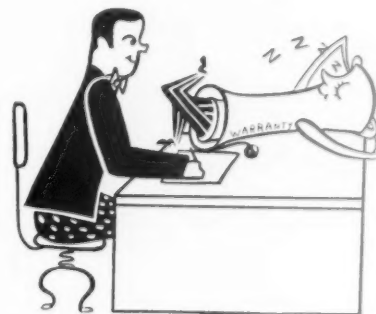
Seller Waives Breach

According to a late higher court decision, either a buyer or seller may automatically "waive" a guarantee as by overlooking a breach and continuing "doing business".

For illustration, in *Williams Lumber Company, Inc., v. Stewart Gast & Bro.*, 21 So. (2d) 773, reported July, 1945, it was shown that a buyer and seller entered into a written contract by the terms of which the buyer agreed to deliver 30,000 feet of lumber per week until 50 houses were built by the purchaser. The seller failed to make several weekly deliveries of the full 30,000 feet of lumber and the purchaser had a legal right to declare the contract breached and recover damages. However, the purchaser continued making weekly demands that the seller fulfill its contract and deliver the lumber.

Later the purchaser sued for damages as a result of the seller breaching its contract. The higher court refused to allow the purchaser any damages, and said:

"Where a contract requires delivery within a certain time, failure to deliver within that time consti-



tutes a breach. . . . By continuing to accept deliveries after each breach, and by urging the Williams Company (seller) to continue performance of the contract, Gast & Brother (purchaser) waived any rights which might otherwise have resulted from each breach."

Also, see *Transradio Press, Inc., v. Radio*, 158 Pac. (2d) 289, reported August, 1945, where a purchaser failed to promptly complain regarding the service rendered by a seller. The higher court held in favor of the seller, and said that

where a buyer accepts merchandise which is inferior to the contract quality, and he knew or should have known it, his claim for damages resulting from such defect cannot be maintained. This court further said:

"The failure of the defendants (purchaser) to complain as to defective service precluded a consideration of the question as to whether the contracts had in fact been performed in accordance with their terms."

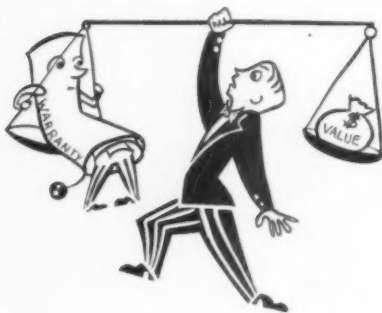
Contract Is Conclusive

Under ordinary circumstances, unless a purchaser can prove that the seller breached the contract, the purchaser is obligated to pay to a seller *exactly* the amount he agreed to pay for merchandise or equipment, irrespective of its real value or worth. The same law now is effective if the contract price does not exceed the O. P. A. selling price.

For illustration, *Louisiana Tractor & Machinery Company v. Henry*, 24 So. (2d) 188, reported January, 1946, it was shown that the owner of a "Lorain #30 Dragline" sold it to a purchaser for \$5,000.

In subsequent litigation between the buyer and seller the question presented the court was whether the machine was worth \$5,000. This court said:

"The value of the dragline is not an element for consideration in this case. For the purpose of the sale,



the value was whatever the purchaser would pay and the seller accept."

Shipment Causes Defect

Modern higher courts consistently hold that a seller is not obligated to put shipped merchandise in good or salable condition if the testimony proves that he did not guarantee quality "on delivery".

For example, in *Reliable Feed Company v. Lerner*, 155 Pac. (2d) 364, reported April, 1945, it was shown that a seller sold a machine which transforms mash or bran into

small, hard pellets which are fed to poultry. The purchaser refused to pay the agreed price claiming that the machine was defective and would not operate.

The seller filed suit and proved that the machine had operated satisfactorily until three days before it was dismantled and shipped to the buyer.

Therefore, the higher court held the purchaser bound to pay the agreed purchase price, and said:

"The plaintiff (seller) denied making any statements constituting a warranty. Witnesses testified that it was operated by the plaintiff until three days after the sale. . . . From this testimony the inference may have been drawn not only that there was no warranty, but also that the reason this machine would not



work when reassembled was because of its removal."

Quite obviously this purchaser may have held the seller responsible for failure of the machine to operate satisfactorily, if the contract of sale had contained a clause by which the seller guaranteed the quality and efficiency of the machine after being installed in the purchaser's plant.



"Before you sign the contract, let me check with the home office."

SEE FAIRBANKS-MORSE FIRST FOR SCALES



WHEN you call in a Fairbanks-Morse scale engineer, you've taken the first step toward getting far more than enduringly reliable weighing instruments.

You've made the right start toward profiting from the often unsuspected services modern scales can render.

Today's line of Fairbanks-Morse Scales is so complete, so diversified, and so adaptable that regular or

special models will fit into your procedures as modern production tools.

They can count parts and products, weigh while materials are moving, weigh and disburse preset amounts automatically, read themselves and print weight records, and perform many other plus services.

Fairbanks, Morse & Co., Chicago 5, Illinois.

Fairbanks-Morse

A name worth remembering



Diesel Locomotives • Diesel Engines
Scales • Motors • Pumps • Generators
Magnetos • Stokers • Railroad Motor
Cars and Standpipes • Farm Equipment

New PRODUCTS • IDEAS

Purchasing Agents and their Assistants are invited to Check the pre-paid "Know-How" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



DECARBONIZING CLEANER



FOR removing deposits of carbonized oil, grease and dirt, new cleaner known as Magnus 755 has been introduced by the Magnus Chemical Co., Garwood N. J. It is claimed to have a rapid penetrating action, and to be a time and labor saver. It is said to be safe for use on any kind of metal and will not injure leather or fiber gaskets. It is also excellent paint stripper, removing paint, enamel and lacquer down to bare metal.

It is said to be safe for use on any kind of metal and will not injure leather or fiber gaskets. It is also excellent paint stripper, removing paint, enamel and lacquer down to bare metal.

PANTEX VINYL PLASTIC FILM

PANTEX is name of unsupported vinyl plastic film developed by Pantasote Co., Passaic, N. J., suitable for making upholstery, decorative wall coverings, brief cases, desk sets, book bindings, wallets, etc. Ease of cutting and tailoring and fabricating makes possible unusual designs. Samples of Pantex will be sent upon request.

able for making upholstery, decorative wall coverings, brief cases, desk sets, book bindings, wallets, etc. Ease of cutting and tailoring and fabricating makes possible unusual designs. Samples of Pantex will be sent upon request.

CARBIDE TIPPED BLADES



LINE of standard Vibra - Cushioned face milling cutters with carbide tipped inserted blades has been introduced by Tungsten Carbide Tool Co., 2661 Joy Road, Detroit, Mich. Outstanding feature of

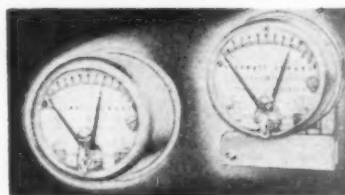
the cutters is that they combine the advantages of both inserted blade and fixed blade type of cutters for steel milling. Produced for National Standard Drive only, for the present. Four standard sizes — 6, 8, 10 and 12 inch OD, are available, each in both left hand and right hand types.

NEW ASPHALTED GYPSUM SHEATHING

It is said to "weather all weather," and to make it possible to cut sheathing costs from 1/3 to 1/2. Edges are tongue and grooved. Only 4 nails per stud are needed under wood siding or stucco. It can be cut and fitted right to the studs. No building paper is required. It has fireproof qualities of all gypsum building products.

NEWLY developed asphalted-gypsum, weather-proof core sheathing is announced by the U. S. Gypsum Co.

THERMAL WATT-DEMAND METER



NEW thermal watt-demand meter, operating on the "direct heat" principle and known as Type HI-1, is announced by General Electric's Meter and Instrument Division. The "direct heat" principle is based on the use of temperature sensitive bi-metallic spirals that act as their own heaters, thus increasing the life and accuracy of the meter while minimizing the need for maintenance. Detailed information on the new meter is contained in bulletin GEA-4541, available on request from General Electric Co., Schenectady 5, N. Y.

SEGMENTAL TYPE LAMINATION DIES

Segmental Type Lamination Dies, featuring removable and replaceable punches and segments. Removable feature eliminates necessity of replacing entire punch build-up when one or more segments become worn.

THE Crescent Tool & Die Co., 1780 Southfield Rd., Lincoln Park, Mich., announces manufacture of

PRODUCTION PULVERIZER

A NEW mechanical dustless, screenless pulverizer, No. 5 Mikro-Atomizer, claimed to be especially suited for small quantity production, pilot plant and laboratory work, has been announced by the Pulverizing Machinery Co., Chatham Rd., Summit, N. J. Grinding capacities are said to be from 5 to 200 lbs. per hour, with reductions to ultrafine particle sizes in the 1 to 25 micron range.



SAFETY STEEL-MARKING STAMPS

curved line, concave and convex marking and interchangeable steel type holders are announced by M. E. Cunningham Co., 154 E. Carson St., Pittsburgh 19, Pa. The company's Mecco safety steel is said to eliminate mushrooming and spalling. Knurling on sides of stamps and holders assures positive grip. Bulletin WG-462 describes this marking equipment.

"SAFETY" wedge grip letter and figure steel stamps as well as multiple character stamps for straight and

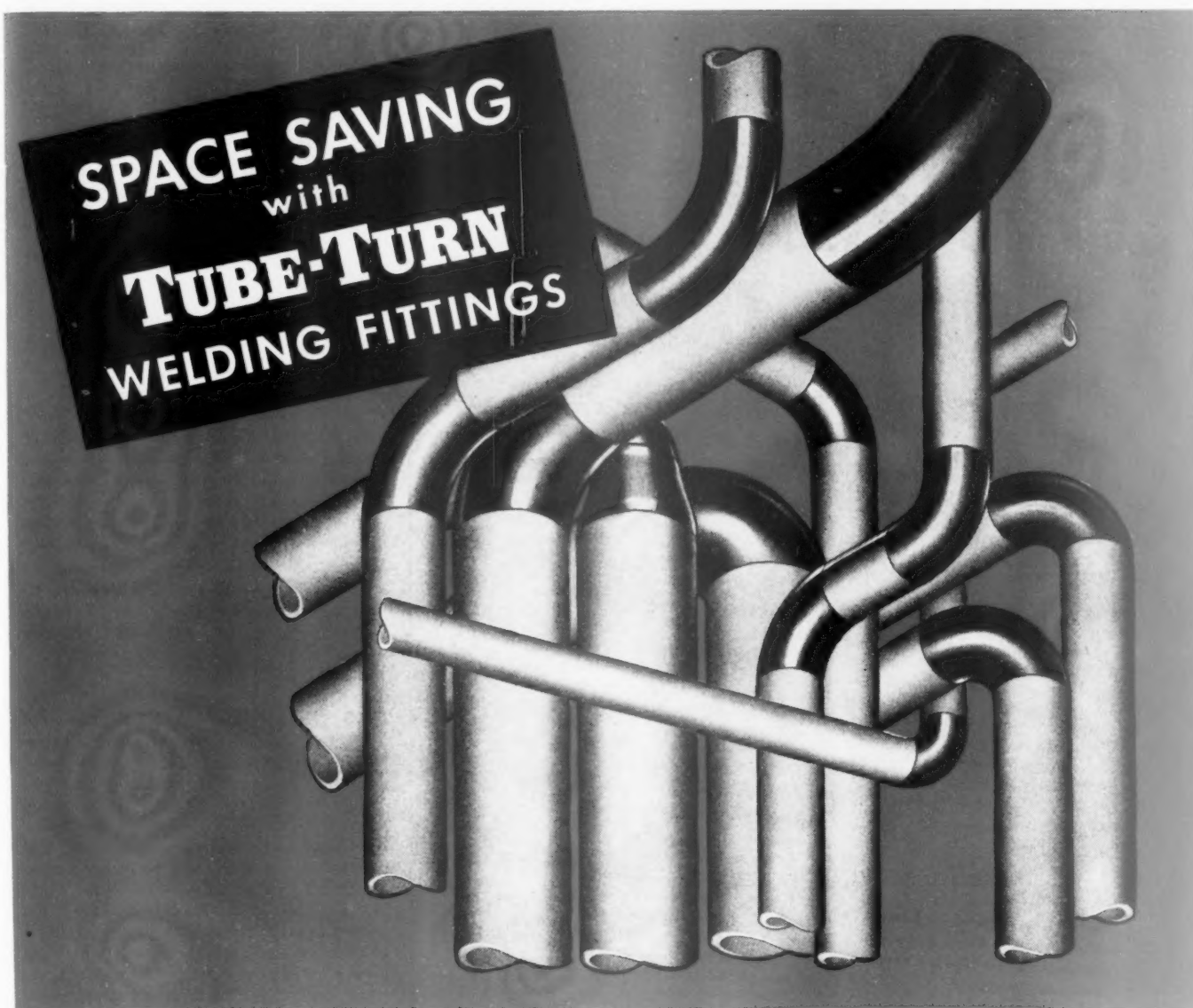
BATTERY CHARGER

SINGLE circuit battery charger for 60 c, 3-phase power supply, is announced by Electric Products Co., 1725 Clarkstone Road, Cleveland, Ohio. It is for charging one battery at a time.

Time clock is used with Edison batteries. Charger shuts down when battery is fully charged.



(Continued on page 148)



COMPACTNESS and flexibility are built into piping installations where pipe is joined with Tube-Turn welding fittings. Ceiling mounted pipe and streamlined expansion loops, for example, are constructed with only plain butt welds in nearly all cases. Tube-Turn elbows and returns can be cut to odd angle turns because of their uniform wall thickness.

Close-nested, permanently leakproof piping systems are further assured by the dimensional accuracy of Tube-Turn welding fittings. This accuracy permits installing *any* pipe line according to design without making allowances for variations in individual fittings. All Tube-Turn fittings of the same part number are identical in all dimensions. Whatever your fittings requirement, from one-half inch to 30 inches,

choose quality-controlled Tube-Turn welding fittings for uniform wall thickness, smooth inner wall, close-knit grain structure, freedom from inherent strains.

Consult your favorite piping authority and see your Tube Turns distributor. For more information on superior Tube-Turn welding fittings and pace-setting installations in many industries, write for Catalog 111.

Selected Tube Turns Distributors in every principal city are ready to serve you from their complete stocks.

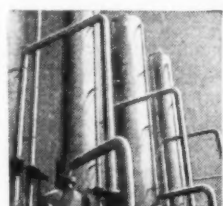
TUBE TURNS (Inc.) Louisville 1, Kentucky. Branch Offices: New York, Washington, D. C., Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago, Houston, San Francisco, Seattle, Los Angeles.

TUBE-TURN

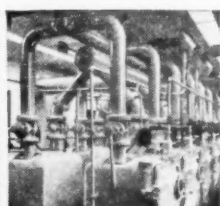
TRADE MARK

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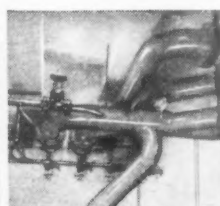
Welding Fittings and Flanges



PETROLEUM



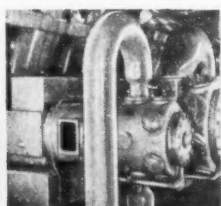
CHEMICAL



GENERAL PIPING




SHIPBUILDING



POWER



EQUIPMENT



For Prompt Service on
SAFETY Equipment
Phone your Willson Distributor

In this list you'll find one of your neighbors—a distributor of **WILLSON** Personal Safety Equipment. That distributor, backed by our 75 years experience in safety service, is well qualified to help you on any eye and respiratory safety problem. That distributor, in addition, maintains a local stock of **WILLSON** safety equipment to give you what you want—when you want it.

ALBUQUERQUE, N. MEX.—Hendrie & Bolthoff Mfg. & Supply Co.
ATLANTA, GA.—Fulton Supply Co.
BALTIMORE, MD.—Carey Mach. & Sup. Co.
BIRMINGHAM, ALA.—Safety Engineering & Supply Co.
BOSTON, MASS.—Cutter, Wood & Sanderson Co.
BUFFALO, N. Y.—American Allsafe Co.
BUTTE, MONT.—Montana Hardware Co.
CASPER, WYO.—Casper Supply Co.
CHARLESTON, S. C.—Cameron & Barkley Co.
CHARLESTON, W. VA.—Safety First Supply Co.
CHATTANOOGA, TENN.—C. D. Genter Co.
CHICAGO, ILL.—Protective Equipment, Inc.
CINCINNATI, OHIO—The E. A. Kinsey Co.
CLEVELAND, OHIO—Safety First Supply Co.
COLUMBUS, OHIO—The E. A. Kinsey Co.
DAYTON, OHIO—The E. A. Kinsey Co.
DEADWOOD, S. DAK.—Hendrie & Bolthoff Mfg. & Supply Co.
DENVER, COLO.—Hendrie & Bolthoff Mfg. & Supply Co.
DETROIT, MICH.—Willson Products, Inc.
GRAND RAPIDS, MICH.—F. Ranville Co.
GREENSBORO, N. C.—Smith-Courtney Co.
GREENVILLE, S. C.—Carolina Sup. Co.
HICKORY, N. C.—Smith-Courtney Co.
HOUSTON, TEXAS—Allied Safety Equipment Co.
INDIANAPOLIS, IND.—The E. A. Kinsey Co.
JACKSONVILLE, FLA.—Cameron & Barkley Co.
KANSAS CITY, KANS.—L. R. Stone Supply Co.
LOS ANGELES, CALIF.—E. D. Bullard Co.
LOUISVILLE, KY.—Neill-LaVieille Sup. Co., Inc.
MEMPHIS, TENN.—J. E. Dilworth Co.
MILWAUKEE, WIS.—Protective Equip., Inc.

MUSKEGON, MICH.—Factory Supply Co.
NEW ORLEANS, LA.—Woodward, Wight & Co., Ltd.
NEW YORK, N. Y.—W. S. Wilson Corp.
OKLAHOMA CITY, OKLA.—Hart Industrial Supply Co.
OMAHA, NEBR.—Interstate Mach. & Sup. Co.
PHILADELPHIA, PA.—Industrial Prod. Co.
PITTSBURGH, PA.—Safety First Supply Co.
PORTLAND, ORE.—J. E. Haseltine & Co.
PROVIDENCE, R. I.—James E. Tierney
RICHMOND, VA.—Smith-Courtney Co.
ST. LOUIS, MO.—Safety Incorporated
ST. PAUL, MINN.—Farwell, Ozmun, Kirk & Co.
SALT LAKE CITY, UTAH—Industrial Supply Co., Inc.
SAN FRANCISCO, CALIF.—E. D. Bullard Co.
SANTA FE, N. MEX.—Hendrie & Bolthoff Mfg. & Supply Co.
SAVANNAH, GA.—Cameron & Barkley Co.
SCRANTON, PA.—L. B. Potter & Co.
SEATTLE, WASH.—J. E. Haseltine & Co.
SPOKANE, WASH.—J. E. Haseltine & Co.
SPRINGFIELD, MASS.—Charles C. Lewis Co.
SYRACUSE, N. Y.—Syracuse Supply Co.
TACOMA, WASH.—J. E. Haseltine & Co.
TAMPA, FLA.—Cameron & Barkley Co.
TROY, N. Y.—The Troy Belting & Sup. Co.
TULSA, OKLA.—Hart Ind. Supply Co.
VICKSBURG, MISS.—J. E. Dilworth Co.

CANADA

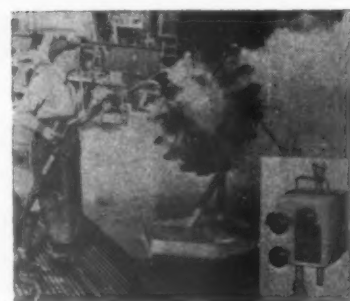
TORONTO—Safety Supply Co.
MONTREAL—Safety Supply Co.
VANCOUVER—Safety Supply Co.

GOOGLES • RESPIRATORS • GAS MASKS • HELMETS

WILLSON

PRODUCTS INCORPORATED
 READING, PA., U.S.A. Established 1870

HYDRO STEAM CLEANING UNIT

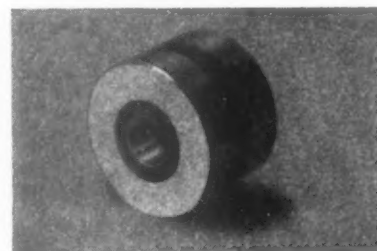


HYDRO steam unit which uses regular steam supply to furnish powerful cleaning action, is announced by Turco Products, Inc., 6135 S. Central Ave., Los Angeles, Cal. Unit weighs only 28 pounds. Can be used on any steam line maintaining 80 to 150 pounds pressure. Three manual controls vary the temperature, quantity of solution and nozzle pressure. It can be adjusted to deliver a high temperature penetrating spray or a moderately warm spray. There are no moving parts, pumps, pressure tanks, motors, toxic or explosive cleaning agents.

GAS FIRED COMPOUND TANK

A NEW gas fired electrically controlled, fully insulated production tank for heating, melting and pouring battery transformer, capacitor and resistor compounds has been announced by Aeroil Products Co., West New York, N. J. The unit, Model #22TGT, is heated from the inside through a removable immersion tube system, which is claimed to effect a 50% savings in time, labor and fuel. Tank is equipped with two separately heated outlet valves. Thermostatic controls give temperature regulation from 100 to 550°F. Illustrated literature available.

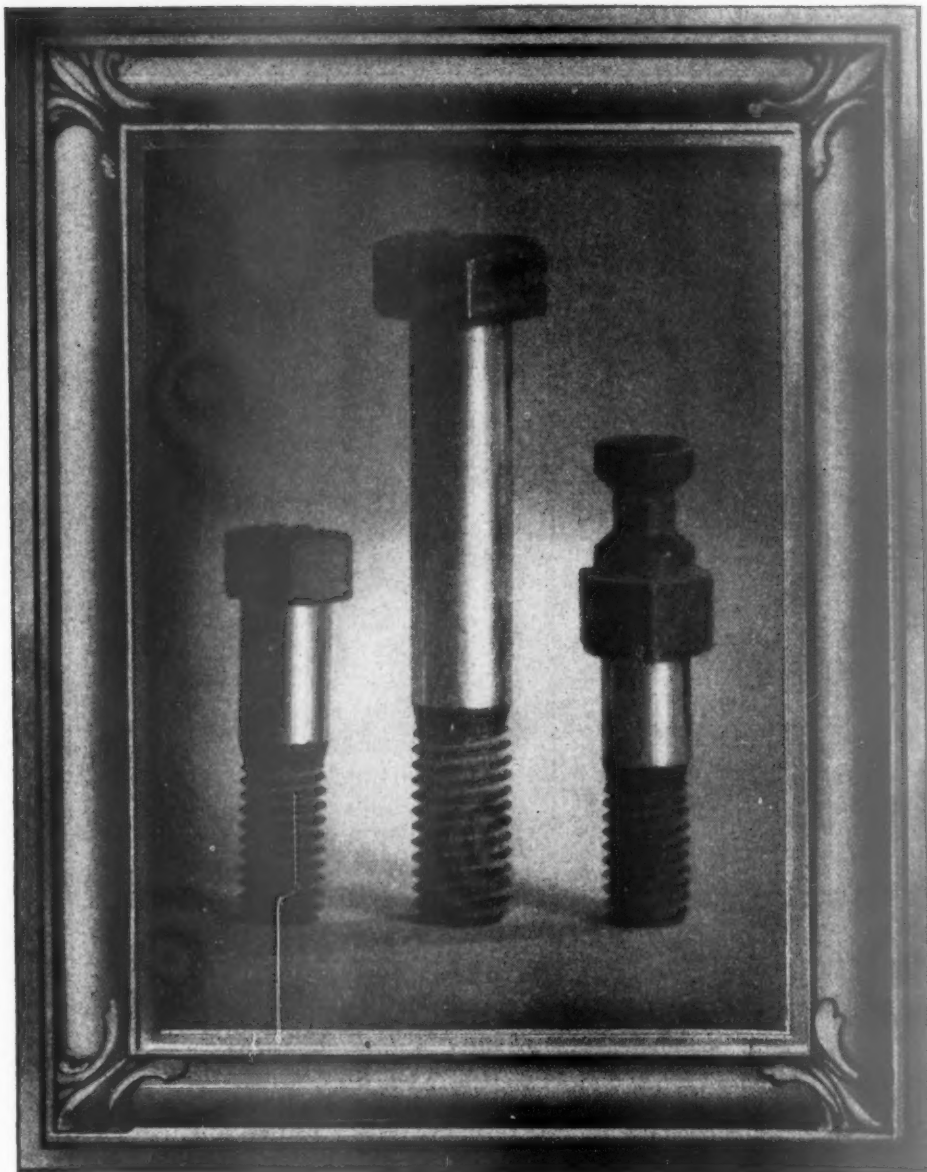
COMPACTING DIES



"MALTA" is name of line of carbide-inserted compacting dies announced by the Jessop Steel Co., Washington, Pa. Illustration shows one of 16 inserted carbide dies which have produced over 50 million tablets "with no sign of wear." This production amounts to approximately 3,500,000 tablets per die, whereas original production ran only 150,000 tablets on steel dies using both ends. Malta carbide dies are furnished in sizes from 1/8" solid drilled dies, guides, and bushings, to 36" inserted drawing dies.

(Continued on page 150)

**PORTRAIT
OF A RUGGED,
LONG-LIVED
FAMILY**



THESE are star performers. They don't lose their heads in tough situations. They don't stretch or twist out of it when extra pressure is applied. They don't crack under strain. No, they stay right on the job, dependably, through a long life. They're cold headed bolts, forged by the million from Youngstown cold heading steel, by Allied Products Corporation, of Detroit.

The dependability of any cold-forged bolt begins in the alloy steel from which it is fashioned. In Youngstown Alloys, you'll find exactly the chemical and metallurgical

properties that cold forging calls for--*proper ductility which permits rapid, accurate shaping in the forging dies to intricate designs and precision tolerances...positive uniformity*, which insures that every bolt is an identical twin to every other one of its type and size...*extra strength and toughness*, which insure satisfactory long-time performance in severe service.

Youngstown Alloys for cold forging are available now. Let us discuss your requirements. Write, wire or phone our nearest branch.

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GENERAL OFFICES : YOUNGSTOWN 1, OHIO

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Bars - Rods - Sheets and Plates - Pipe
and Tubular Products - Conduit -
Electrolytic Tin Plate - Coke Tin
Plate - Wire - Nails - Tie Plates and Spikes.



Since 1915

**A Leading Name
in Brass and
Bronze Products**



- Brass and Bronze Free Turning Rods
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- Bronze Welding Rods
- Extruded Brass Shapes
- Brass and Bronze Forgings (up to 100 lbs. in weight)
- Brass Pressure Die Castings

Quality alloys by brass specialists

TITAN METAL MANUFACTURING CO.

Plants at Bellefonte, Pennsylvania

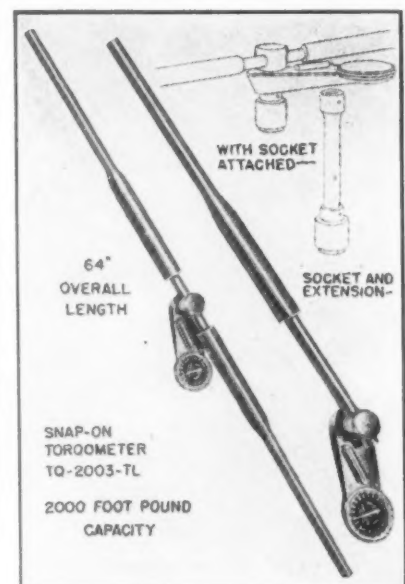
Sales Offices at

New York—39 Cortland Street • Chicago • San Francisco • New Orleans

Export Office—70 Pine Street, New York 5, N. Y.

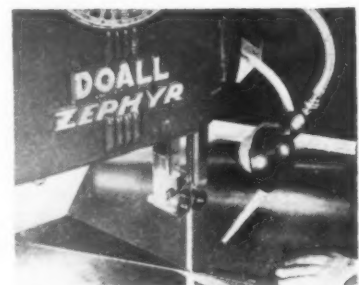
Paris Office—4 Rue Geothé, Paris, France

DUAL HANDLE TENSION WRENCH



NEW "T-type" Torqometer announced by Snap-on Tool Corp., Kenosha, Wis., is said to offer definite advantages for specific operations where working space is limited, and to provide adaptability, power and accuracy for all big nut tensioning jobs requiring tensions up to 2000 foot pounds. It can be used as a double or single handle tool. Large 4" dial and pointer are adjustable to position giving easiest readability. Flash signal lights when exact tension is reached. Any socket wrench having a 1" square drive can be used with model illustrated.

METAL CUTTING BAND SAW



ZEPHYR 16 is new high speed metal cutting band saw announced by the DoAll Co., Minneapolis, Minn. Designed primarily for light gage steel and foundry applications it is also applicable to woodworking and pattern shops as well as on production lines where it is desired to cut material as fast as it can be fed into the saw. This unit has 16" throat depth and 10" thickness capacity, and infinitely variable speed range from 1000 to 5000 f.p.m. It slices through 1/9" stainless at 48.6 lin. inches per minute; 13 gage steel at 150"; 75 ST aluminum at 100 square inches. Aluminum, bronze, brass, copper, zinc, gates and risers from iron castings cut about as fast as the material can be pushed into the teeth of the saw.

(Continued on page 152)



IT'S THE *Finish* THAT COUNTS

● Consumers automatically associate the word "plastics" with shining eye-appeal and smoothness to the touch. That's why the kind of finish General Industries gives to every molded piece is so important. It creates that really good first impression that shows up in consumer appeal . . . and increased sales.

Finishing seems like a simple operation. Yet we give it the same infinite care that we put into every portion of the plastics molding process. Drilling, tapping, machining and the accurate placing of inserts, all a part of finishing, are done with an eye to making your product stand out in

the plastics field. Even the kind of cloths and type of abrasives used for buffing and polishing are specially selected to produce the finest possible results.

From start to finish, General Industries gives *your* job that extra attention to accuracy and detail that has made us a leader in the business. We welcome the opportunity to consult with you on your plastics molding problem. You can feel free to call on our wealth of experience and special "know-how" without obligation.

**THE GENERAL
INDUSTRIES co.**

DEPT. P . . . ELYRIA . . . OHIO

BIRD Rubberlike[®] RUNNER

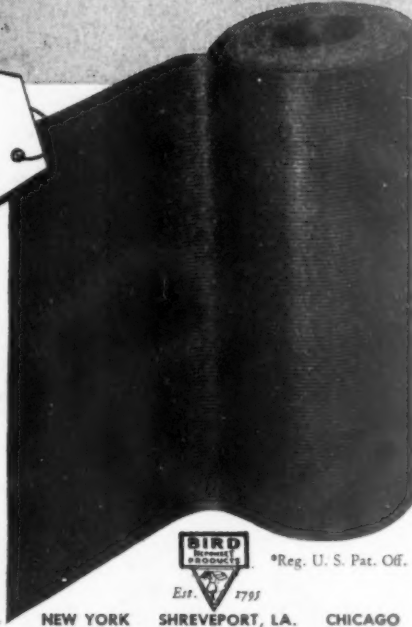
Long-Lasting Protection for
HEAVY TRAFFIC floors

FOR LESS THAN
6¢ per Sq. Ft.

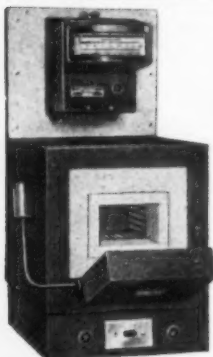
Rubberlike, the modern composition floor runner, provides positive protection for heavy traffic areas at less than 6¢ per square foot — a fraction of what most matting costs. Its sturdy corrugations cushion and quiet footsteps. Skidproof even when wet, Rubberlike makes slippery floors safe to walk on. Hugs any surface without cementing — won't curl at edges. Cuts cleaning costs . . . lasts and lasts under tough treatment on floors in factories, offices, schools, hotels, institutions. In 25 yard rolls, 36" wide. Order from supply house or write for free sample to Bird & Son, inc. Dept. 95, East Walpole, Mass.

BIRD & SON, inc., EAST WALPOLE, MASS.

NEW YORK SHREVEPORT, LA. CHICAGO



*Reg. U. S. Pat. Off.



It's New! HUPPERT "HI-TEMP" FURNACE

Automatic
Temperature
Control

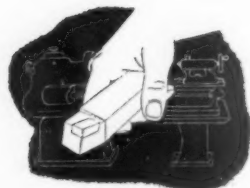
★
Maximum
Operating
Temperature
2200° F.

For 220 V. operation add \$30.00 to above prices. Also available as floor model with O.D. of 18" x 63" x 22". Complete with automatic temperature control . . . \$440.00

A special Huppert development for precision treating of high speed steel reamers, cutters, tools, etc. Low heat loss — precision control — low current consumption. The Huppert "Hi-Temp" Furnace features multi-insulation; high temperature alloy elements; "ON-OFF" switch; two pilot lights; all-steel, heavy-duty construction; and counter-balanced door. Completely wired, ready for operation by merely connecting line to outlet box provided with furnace. Operates on 110 V., A.C. Current consumption 2 KW. I.D. 5 3/8" w. x 3 3/8" h. x 6" deep (3 1/2" throat additional). O.D. 18" w. x 32" h. x 20 1/2" deep. Complete with automatic temperature control . . . \$390.00

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KENNAMETAL CEMENTED CARBIDE TOOLS, BLANKS, and SPECIALTIES

- **FOR FAST, ACCURATE METAL-CUTTING** . . . complete selection of single-point tools and milling cutters.
- **RESIDENT TOOL ENGINEERS** in 24 cities available for expert help in proper selection and correct use.
- **WAREHOUSES** in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.



KENNAMETAL

SUPERIOR CEMENTED CARBIDES
KENNAMETAL Inc., LATROBE, PA.

HEAT TREATED TUMBLERS



ADDITION of five new sizes in its "Governor Clinton" line of heat-treated tumblers is announced by the Libbey Glass Company. The new capacities include a squat 8-ounce and tall 7, 8, 10 and 14-ounce sizes, all "heat treated" for extra strength. The line of 8 items provides a matched service for almost every institutional use. Corrugated sidewalls make the tumbler easy to hold.

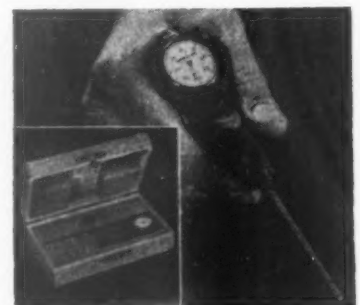
HYDRAULIC POWER UNIT



THIS is new Roper Hydraulic Power Unit known as the Roper-Pac, a complete "3-in-1" hydraulic power unit especially designed for application on all makes of tractors commonly used for industrial yard duty, and is readily adaptable to old tractors now in use. It is engineered to operate at wide range of speeds and can be connected and driven in a variety of ways to suit job needs. It is small and compact, approximately battery size, and easy to install in small space. With the application of hydraulic power for loading and lifting jobs, it makes for saving of time and man power. Geo. D. Roper Co., Rockford, Ill.

It is small and compact, approximately battery size, and easy to install in small space. With the application of hydraulic power for loading and lifting jobs, it makes for saving of time and man power. Geo. D. Roper Co., Rockford, Ill.

SMALL HOLE GAGE



DIAL indicator gage for extremely small holes is announced by Federal Products Corp., Providence, R. I. It will gage holes as small as .122" and up to .250" I.D., to depths as great as 2 3/4". Variations within this range are obtained by use of set of 12 interchangeable gaging plugs. Gage is said to be exceptionally accurate and extremely sensitive to fine dimensional variations. It fits the hand conveniently with the indicator dial in a fully visible position. If new dimensions call for additional plug sizes, such plugs are readily adapted and calibrated to the instrument by using a micrometer caliper.

(Continued on page 156)

Where **PRECISION** is the goal
BRASS is the metal...



Why? →

The Spencer Microscope, used throughout the world for scientific and medical work, and some of the many Anaconda Brass parts used in its construction. Machined samples, illustrated and described on the following page, were supplied by courtesy of American Optical Company, Scientific Instrument Division, Buffalo, New York.



THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut

Here's why

Nothing serves like *BRASS*

IN THE CONSTRUCTION OF SCIENTIFIC INSTRUMENTS

MODERN MICROSCOPES, and similar optical instruments, have one important attribute in common—accuracy in the lens system . . . often held to a *millionth of an inch!* And for the necessary rigidity of the instrument, positive operation, smoothness and precision of adjustment—nothing short of mechanical perfection will do.

That is why, for the critical mechanical parts illustrated below and on the preceding page, nothing serves as well as Brass. For Brass is a sturdy metal . . . it is strong, tough, durable, corrosion resistant, and does not rust. It machines readily—leaves clean, full-formed threads and knurls . . . provides exceptionally smooth milled, reamed or turned surfaces for bearing or mating parts.

Brass is economical, too. Through The American Brass Company it is produced in a wide range of readily-adaptable alloys in commercial forms; also in special extruded and drawn shapes, hot pressed parts and pressure die castings. We'll be glad to cooperate in determining the form and alloy most suitable for your needs.



THE AMERICAN BRASS COMPANY

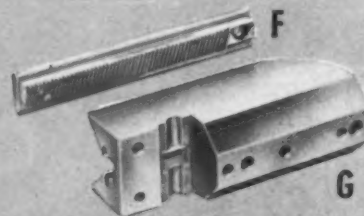
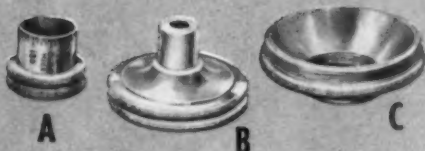
Subsidiary of Anaconda Copper Mining Company

General Offices: Waterbury 88, Connecticut

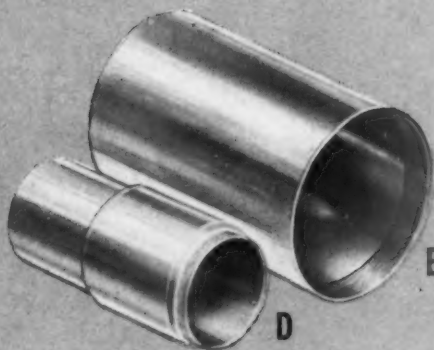
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

46154

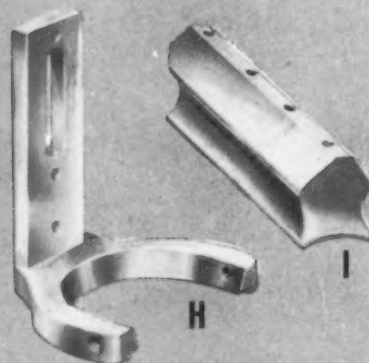
(A) Graduated fine adjustment button, (B) coarse adjustment button, (C) body tube nose adapter. All three are machined from Anaconda Free Cutting Brass Rod—an excellent base, incidentally, for their lasting chromium plate.



Anaconda Brass bar stock was used for this coarse adjustment rack (F), and the intricately form-milled intermediate slide block (G).



(D) Fixed eyepiece tube and (E) body tube are made of Anaconda Seamless Brass Tubes and machined with fine-pitch threads.



This unusual shaped fork-type substage mounting (H) is economically produced as an Anaconda Pressure Die Casting. And by using an Anaconda Hot Pressed Forging for this body slide member (I), which is silver soldered to the body tube, both metal and machining time are saved.

Cross-section of the optical system of a Spencer Polarizing Microscope, a product of American Optical Company, Scientific Instrument Division, Buffalo, New York. This instrument is used widely in many branches of science and industry for studying the structure of materials—fibrous, granular, crystalline, powdered or colloidal.

Anaconda Copper & Brass


ASBESTOS IN ACTION
K&M**"Featherweight"****85% Magnesia****is a Heavyweight****at Keeping HEAT****IN ITS PLACE**

...and its place—in this particular case—is in the steam lines of the air conditioning and heating plant of one of the largest department stores in Washington, D. C. Installed by the Armstrong Cork Company, K&M Distributor, "Featherweight" is once again demonstrating that it is the most efficient of the moulded-type insulation materials.

Designed for pipe surfaces carrying temperatures up to 600° F., it is extremely light in weight, absolutely fireproof, and sufficiently strong mechanically to withstand all ordinary usage ... and then some. "Featherweight" 85% Magnesia has even emerged unscathed from the usually damaging effects of floods or trips to Davy Jones' locker!

In factories, ships, refineries ... K&M "Featherweight" 85% Magnesia has always led the way in keeping heat in its place. Once installed in YOUR plant, it will banish your insulation problems for good. Why not write us for further details?

Nature made Asbestos...

Keasbey & Mattison has been making it serve mankind since 1873



KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA



• The above statement is typical of many reports received from safety directors and plant managers about CESCO's improved face shield with the new plastic headgear.

FOUR GOOD REASONS why this CESCO Shield gives better service:

1. **Durable**—the newly designed headgear is made of flexible, long-wearing plastic, which has proved more durable than other headgear materials.
2. **Clear, tough windows**—made of sturdy plastacele. An exclusive, simple method of attachment permits quick window replacement.
3. **Comfortable**—the flexibility of the plastic headgear and the simple adjustment to varying head sizes assure an easy, comfortable fit on every wearer.
4. **Clean and sanitary**—the plastic headgear does not absorb dirt or moisture, and is easily cleaned with a cloth.

4 styles available
—Write today for
literature and prices



CHICAGO EYE SHIELD CO.
2320 Warren Boulevard
Chicago 12, Illinois



CESCO
FOR SAFETY

LIGHT- WEIGHT HYDRAULIC PUMP

A HYDRAULIC pump which develops 5,000 psi, of simple compact design in models light enough for one man to handle, delivering 0 to 17 GPM at 1200 rpm, has been developed by Hydraulic Machinery Inc. & Super-draulic Corp., 12825 Ford Road, Dearborn, Mich. It is said to develop desired tonnage for hydraulic presses and cylinder actuated machinery without aid of large cylinder assemblies; to provide single source of high pressure and high volume, and to eliminate need for costly intensifiers and accumulators in hydraulic circuits up to 5,000 psi. It is available in two models—constant or variable delivery types.

NEW SURFACE PLATE



SURFACE plate of improved design is announced by the DoAll Co., Gage Divn. Minneapolis, Minn. It conforms to or exceeds the Proposed Commercial Standards for Laboratory Class Cast Iron Surface Plates submitted to industry by the National Bureau of Standards. It is made of specially alloyed close grain iron, and has a working area 14" x 24". Two outstanding features are—underside of the 3/4" overhang is machined all around, thus work or fixtures can be easily and firmly clamped to plate, and, the edge of the working surface has been drilled and tapped on 2" centers all around to enable the user not only to make up gages and comparators from the DoAll Company's Producto-Chek set, but to mount special fixtures of his own design. System of ribbing gives ample support to the working surface.

MULTI- UTILITY MOBILE CRANE

is announced by American Steel Dredge Co., Inc., Fort Wayne, Ind. It is known as the Wayne Crane and is available as a crane or complete with accessory groups for the varied services. Unit can travel, boom, swing and hoist at the same time. Power plant is 62-hp gasoline engine which drives all four wheels and hoisting mechanism. Wheel base 7 ft. 8". Four travel speeds up to 15 mph; 1/2 cu. yd. capacity; crane capacity 4 tons at 10 ft. radius; boom length 30 ft.; shovel and trench hoe boom 15 ft.

RUBBER- mounted, mobile crane, embodying power shovel, trench-hoe, drag- line and clamshell,

COUNTING MACHINE



THE new "Shadowcount," manufactured by the Autotron Co., Danville, Ill., was designed to give industry an accurate, high speed method of counting objects of varied shapes, sizes and weights. It combines the use of a photoelectric circuit with an optical system, and is said to be capable of reaching a counting speed of as high as 1,000 per minute when supplemented by a spacing device.

COLOR RETENTION PLASTICIZ- ING OIL

NEVILLAC TS, new plasticizing resin with little odor and good color retention, has been marketed by the Neville Co., Pittsburgh 25, Pa. It is claimed to be very viscous and slow flowing, soluble in practically all solvents except water, glycerine and higher polyhydric alcohols, and miscible with ethylene glycol and its di- and tri-derivatives. Suggested uses for the new product are as a plasticizer, softener, impregnant, and for water-proof and grease-proof paper coatings.

ROLLER LAPPING MACHINE



ILLUSTRATION shows roller lapping machine developed by Spitfire Tools, Inc., 2930 No. Pulaski Road, Chicago, Ill. It is claimed to simplify and speed up lapping and polishing round plugs, pins or rods and is said to cut job time about 2/3ds. No chucks are used. Work may be put in and taken out for checking and measurement without stopping the machine. Heat is dissipated by large mass of the rollers and a cooling period is ordinarily not necessary, it is claimed. Rollers may be adjusted to accommodate work up to 6" in diameter.

(Continued on page 160)



Call the
**SHELL LUBRICATION ENGINEER as
 the FIRST STEP to the RIGHT SOLUTION
 of any LUBRICATION PROBLEM**



They even made a TASTE TEST of a SHELL RUST PREVENTIVE!

PROBLEM: Specifications in contract for making U. S. Army cooking kettles called for a protective coating that came off easily with cold water. Absolutely no taste or odor could remain. The manufacturer preferred a coating to be applied by dipping at room temperature.

SOLUTION: When the Shell Lubrication Engineer surveyed the problem, he recommended a Shell Ensio Oil. As a test, this material was applied to utensils of the plant cafeteria. These were washed in cold water—then placed in normal use. *Not one employee could detect the slightest trace of the Rust Preventive used.*

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. Write for a copy of Shell's 40-page booklet on Rust Preventives. Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York; or 100 Bush Street, San Francisco 6, California.



No one really cares what a Rust Preventive tastes like, but the maker of U. S. Army cooking kettles had to be sure that the Rust Preventive could be completely removed so that it would not taste!

SHELL RUST PREVENTIVES

OILS . . . FLUIDS . . . COMPOUNDS



FUSETRONS

-Prevent Needless Shutdowns-

Here's Why

Fusetrons have a tremendous time-lag—far greater than ordinary fuses—due to the combining of a fuse and a thermal cutout.

Here's how time-lag of Fusetrons compares with that of ordinary fuses.

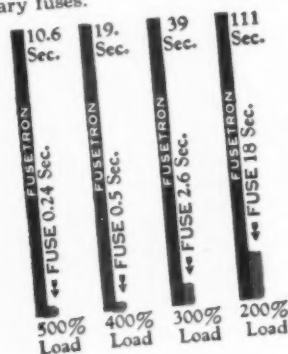
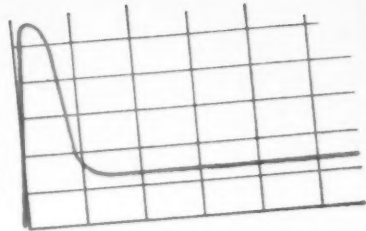


Chart shows 30 amp. 250 volt fuses. Other sizes and 600 volt ratings show similar results.

The great time-lag of Fusetrons permits them to hold harmless overloads and keep circuits in operation instead of opening and causing useless shutdowns.

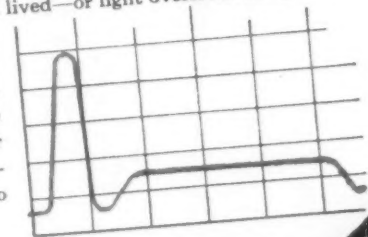
Ordinary fuses or other forms of protective devices *cannot* do this job.

AC motors require a current of 3 to 9 times their rating for starting. This high starting current often causes ordinary fuses to open.



Fusetrons Have the Capacity to Absorb This High Starting Current Without Opening—even where type of load causes starting current to hang on.

In normal operation overloads often occur that are heavy but short lived—or light overloads hang on. In either instance they are harmless—yet they often cause ordinary fuses or other forms of protective devices to open.



Fusetrons Will Hold Such Harmless Overloads—and Keep the Circuit in Operation.

FOR EXAMPLE

LIKEWISE

• • INSTALL FUSETRONS THROUGHOUT THE PLANT TO GET

- ★ Entirely wipe out needless blows caused by motor starting currents or other harmless overloads.

(See above)

- ★ Give Thermal Protection to Panelboards and Switches

The thermal cutout in the Fusetron will open whenever its temperature reaches 280° F. Thus if poor contact heat develops from any cause the Fusetron cuts off the current before damaging temperatures can be reached.

Ordinary fuses can't so protect because the temperature of the link must reach 786° F. before it will melt out.

With Fusetrons you are warned that a minor maintenance job is needed instead of having panel or switch damaged or destroyed by poor contact.

- ★ Prevent Needless Blows Caused by Heating in Panels and Switches

Ordinary fuses have 55 to 140% greater electrical resistance at full load than Fusetrons, hence Fusetrons produce less heat and thus eliminate useless shutdown troubles caused by fuses running too hot in panelboards and switches.

- ★ Permit Use of Larger Motor or Adding More Motors on Circuit WITHOUT Installing Larger Switch or Panel

The operating load on Fusetrons can be close to their ampere rating because Fusetrons hold starting currents. But ordinary fuses

must be installed oversize because they lack sufficient time-lag to hold starting currents.

By replacing oversize fuses with Fusetrons, you can load panels or switches to near capacity. A large motor or additional motors can be installed without the trouble or expense of changing the panel or switch.

- ★ On New Installations PROPER Size Switches and Panels Can Be Used Instead of OVERSIZE

With ordinary fuses, switches and panels must be oversize because fuses larger than the operating load must be used to hold starting currents.

But Fusetrons hold starting currents, therefore, PROPER size switches and panels to fit the load can be installed, saving money and space.

- ★ Protect motors against burnout

On normal installations, Fusetrons used in a size near ampere rating of motor will protect it against burnout from lack of oil, worn bearings, tight belt or anything that causes a dangerous electrical overload—yet their tremendous time-lag keeps them from blowing on motor-starting current.

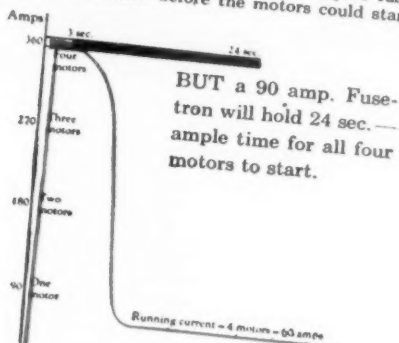


BUSS

Hold Harmless Overloads without Sacrificing Protection

This tremendous time-lag will also prevent needless blows on MAINS AND FEEDER CIRCUITS. Even if all motors on the circuit start at one time—Fusetrons will not open. For example: four 15 ampere motors on a circuit would ordinarily be protected by 90 ampere fuses.

If these four motors start at one time and the starting current of each motor is 90 amperes, the combined starting current is 360 amperes. At this load a 90 ampere fuse would open in about 3 seconds—before the motors could start



SO with Fusetrons installed in mains, feeders and all branch circuits—shutdowns caused by the needless opening of fuses or other forms of protective devices on motor starting currents or other harmless overloads are entirely wiped out.

HERE'S PROOF

"Fusetrons Saved Us a Lot of Money and Trouble on Our Crusher Circuit"—Paul G. Nunn, Manager, The Nunn Company, Overton, Nevada.

Mr. Nunn continues, "In April, 1942, we installed a crusher powered by a 40 h. p. motor. Ordinary fuses were installed. We had trouble from the beginning as the fuses would blow out almost as fast as we could put them in. We were advised that the motor was too small and it was recommended that a 60 h. p. motor be installed. The cost of the new motor and larger feeders we were told would amount to about \$2,000.00.

"We were about to go ahead, however, as the shutdowns were costing us about \$20.00 per day in labor alone not to speak of loss in production.

"My brother, however, sent us a set of Fusetrons and suggested we try them out. We did. Much to my surprise when the power was thrown on the Fusetrons held. This was nearly two years ago and we have not had a Fusetron blow.

"I feel that you should know that Fusetrons saved us a lot of money and a lot of trouble. We are changing over to Fusetrons throughout our plant."

MANY KINDS OF PROTECTION HERETOFORE NOT AVAILABLE

★ Give DOUBLE burnout protection to large motors

Larger motors already equipped with overload protection sometimes burn out due to thermals or relays failing to operate. Replace fuses used for short-circuit protection with Fusetrons of size near motor rating and they will protect motor against burnout from any electrical overload, entirely independent of other overload device.

★ Provide simplest way to stop burnouts from single phasing

When single phasing occurs, increased current flowing through remaining phase will open Fusetrons (if size used is near the rating of the motor) and shut down motor. Never before has such dependable single phasing protection been available.

★ Make burnout protection of SMALL motors simple and inexpensive

Small motors have generally been operated without burnout protection because the cost of protecting them has been too great compared to cost of replacing motor. Now for the little cost of

installing a Fusetron of proper size, any motor can be given safe, dependable burnout protection.

★ Protect Coils, Transformers and Solenoids against burnout

Install a proper size Fusetron. It won't open on harmless overloads or normal current surges, yet should a dangerous overload occur for any reason it will cut off the current to prevent a burnout.

Get All the Facts

★ GET BETTER PROTECTION—SEND THE COUPON NOW

Even one lost motor or one needless shutdown or one destroyed panel may cost you more than replacing every fuse with a Fusetron. Don't risk such losses, change over the whole plant to Fusetrons.

BUSSMANN MFG. CO., University at Jefferson • St. Louis 7, Mo.

Division McGraw Electric Co.

FUSETRONS

SOLD THROUGH WHOLESALE

BUSSMANN MFG. Co., University at Jefferson
St. Louis 7, Mo. (Division McGraw Electric Co.)
Please send me complete facts about BUSS Fusetrons.

Name _____
Title _____
Company _____
Address _____ State _____
City _____

PAGE FENCE *-Since 1883*

• AMERICA'S FIRST WIRE FENCE •

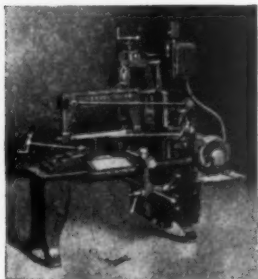


Buy Your Fence as You Buy Insurance

• When you choose protection for your property, buy the fence that is best suited to your individual needs. You can have a long-lasting Page Chain Link Fence in a choice of four superior metals, one of which will be best for you: 1. Corrosion-resisting Page Aluminum. 2. Page Copper-Bearing Steel, heavily galvanized. 3. Page-Allegheny Stainless Steel, immune to rust. 4. Page-Armco Ingot Iron, purest commercial ferrous metal. And you can have your fence erected by a nearby fence engineering firm which is long-experienced and reliable. Write to any office listed below for illustrated information.

For name of nearest member firm, write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE • BRIDGEPORT, CONN.



Best!
FOR LIGHT DUTY
Speed!

High Speed at Low Cost
No. 4B

For tool room, stock room, or maintenance shop, this 6" x 6" capacity hack saw is superior to anything in its price class. Embodies similar design principles and features of M.A.R.-V.L. Heavy Duty production saws. Cuts a 2" standard pipe in 30 seconds—a 5" round in 8 minutes!

MARVELSAWS

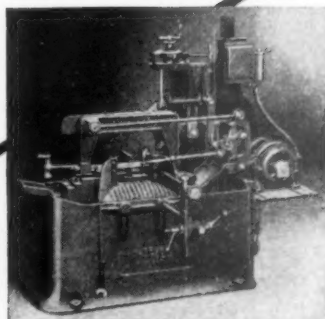
2-Speed and 4-Speed
For applications where materials of different hardnesses be cut, MARVEL 4B is available in 2-Speed and 4-Speed models. Built-in tracks for holding outer end of bars are also available for all models.

Complete Range of Metal Sawing Machines

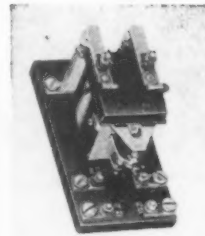
Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fit your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course.)

ARMSTRONG-BLUM MFG. CO.

5700W. Bloomingdale Ave., Chicago 39, Illinois, U.S.A.



HEAVY DUTY RELAYS



RELAYS for heavy duty industrial and electronic applications such as light contactor duty, control of single phase motors and other remote or automatic control purposes, known as Bulletin

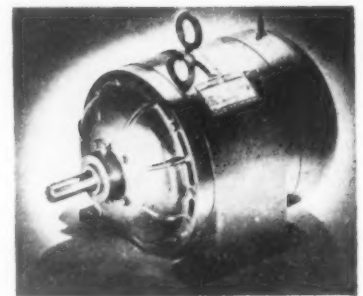
130 Relays, are announced by Ward Leonard Electric Co., Mt. Vernon, N. Y. Contact arrangements are available from one to four poles, normally open or normally closed, single or double throw. Operating voltages for direct current relays are from 6 to 230 volts and for alternating current from 6 to 440 volts. Standard relay features are molded phenolic bases, accessible front connected terminals and corrosion resistant finishes on all metal parts. All sizes employ silver to silver contacts.

NEW V-TYPE COOPER-BESSEMER DIESEL

A "V" type engine, new and radically different, and designed to pack more horsepower into less space

and with less weight, is announced by The Cooper-Bessemer Corp., Mt. Vernon, Ohio. It is for locomotives, river boats, draglines, dredges, excavators and various stationary and industrial applications. It is a four-cycle engine with a 9-inch bore and a 10½" stroke, and is being built in 12 and 16-cylinder models. Among features are four-valve head, one-piece cylinder and head assembly, and geared accessory drive enclosed in main frame.

ENCLOSED FAN-COOLED MOTOR

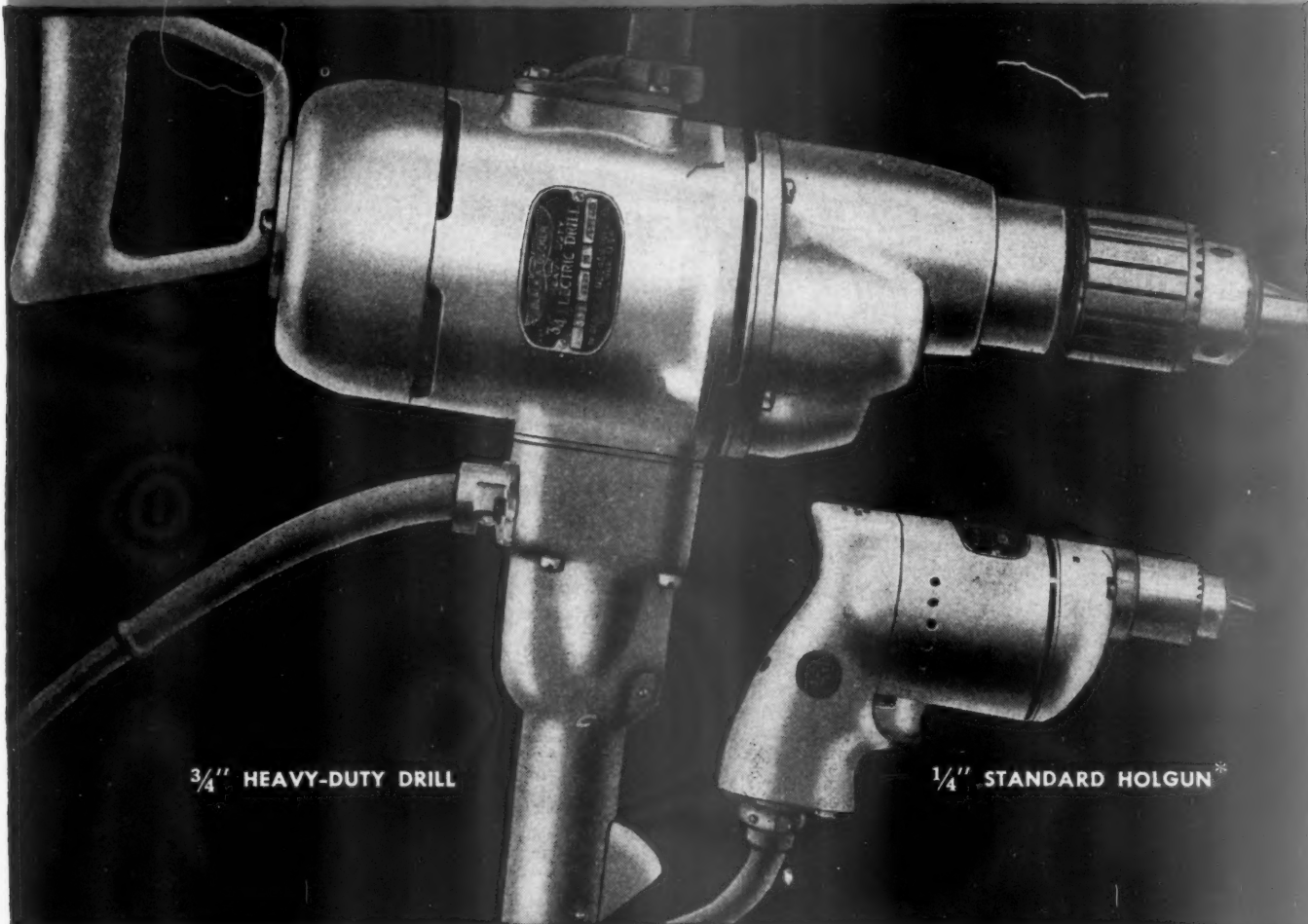


TOTALLY enclosed, fan-cooled motor especially designed for use in extremely dusty, dirty, and corrosive atmospheres has been added to General Electric's Tri-Clad induction motor line. It is available in standard explosion-proof, and dust-explosion proof types from 1 to 1000 hp. It can be used where iron dust and metal filings are in the air and in Class I Groups C and D and Class II Groups E, F, and G, hazardous locations. Short, and compact in construction, the motor can be installed in a small space.

(Continued on page 162)

DRILLS

*TAKE YOUR PICK FROM THE
WORLD'S MOST COMPLETE LINE*



3/4" HEAVY-DUTY DRILL

1/4" STANDARD HOLGUN*

BLACK & DECKER makes the world's most complete line of Portable Electric Drills—so you're certain to find models exactly suited to your type of work. Right now, exceptionally heavy demand keeps the supply of these Drills scarce . . . but it makes sense to wait a little longer for tools that have so much to offer.

Capacities range from 1/4" to 1 1/4" in steel; double in hardwood. Most sizes are available in standard and heavy-duty models . . . most offer choice of high or low speed operation . . . and a wide variety of handles . . . to give you a choice that means maximum operating ease and efficiency. What's more, there are Drill Stands, Hole Saws and a variety of other attach-

ments—to increase the usefulness of Black & Decker Drills and make them a better investment for you.

For more information . . . and a complete line of accessories . . . contact your nearby Black & Decker Distributor. For catalog address: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.

* Trade-Mark Reg. U.S. Pat. Off.



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

HOW THE "WORLD'S GREATEST TOOLMAKERS"

CHECK EVERY

STARRETT HACKSAW AND BAND SAW

*To Insure Greater Uniformity and
Superior Cutting Performance*

Every Starrett hacksaw and band saw must pass a dozen different tests before it is rated worthy of the Starrett name and reputation. The precision gaging tests shown below (checking tooth set and spot testing for uniform hardness) are only two of many between selection of the steel stock and final inspection before packaging in the familiar

Starrett red boxes. Once you select the right blade or saw for your jobs from the *complete* Starrett line, you know that you can expect the same fast-cutting, long-lasting performance with each re-order. Be sure to specify Starrett hacksaws and band saws when ordering from your mill supply distributor.



THE L. S. STARRETT CO.

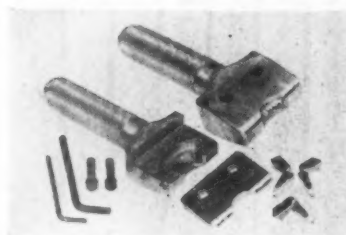
ATHOL • MASSACHUSETTS • U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • HACKSAWS
METAL AND WOOD CUTTING BAND SAWS • GROUND FLAT STOCK

CONVEX MARKING DEVICES

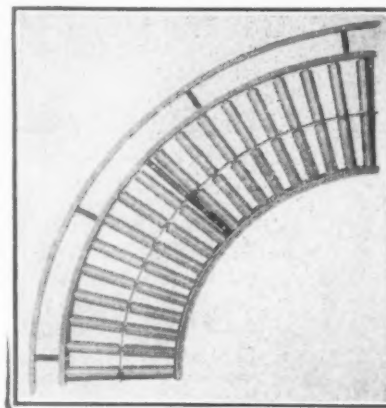


NEW line of convex marking devices for stamping part numbers, serial numbers, dates, etc. on the periphery of cylindrically shaped parts, has been introduced by New Method Steel Stamps, Inc., 147 Jos. Campau, Detroit, Mich. Interchangeable steel type characters are held securely in place by steel plate attached to body of hilder. Type characters are so tapered that they automatically form a pre-determined radius.

EFFICIENT TEXTILE PRESERVATIVE

VERSATILE, efficient and long-lasting textile preservative is announced by Monsanto Chemical Co., St. Louis, Mo. It will be marketed under the trade name of Milmer. Milmer is a reformulated 66-year-old German chemical technically known as Copper 8-Quinolinate. It is said to add long life to such items as fish nets and lines, cordage, tents, tarpaulins, awnings, upholstery materials, shoe liners, fire and garden hose, bags, sporting equipment, etc. The preservative is for mill application only.

GRAVITY ROLLER CONVEYORS



COMPLETELY "packaged" line of gravity roller conveyors—new Lyon product—is announced by Lyon Metal Products, Inc., Aurora, Ill. They are available in these sizes: three straight sections all 10" long; three widths 12", 18" and 24"; three 90 deg. curved sections, 12", 18", and 24" wide; two trestles, 18" and 24" wide. Rollers may be set slightly above level of tops of side rails for handling wide packages. Safe load, 200 lbs.

(Continued on page 164)

RAYON

IN U.S. ROYALS!

The story of another achievement
in making good tires great

1930

"U. S." BEGAN RAYON
CORD RESEARCH

1944

"U. S." INTRODUCED NEW,
STRONGER HEAVY DENIER
RAYON CONSTRUCTION

1937

"U. S." INTRODUCED FIRST
RAYON TRUCK TIRE

1942-3-4-5

U. S. ROYAL RAYON
SYNTHETIC TRUCK TIRES
IMPROVED WARTIME COM-
MERCIAL TRUCK PERFORM-
ANCE 375% OVER COTTON

1938

"U. S." INTRODUCED FIRST
RAYON PASSENGER TIRE

1942-3-4-5

U. S. ROYAL RAYON TRUCK
TIRES HELPED KEEP THE
ARMY'S TRUCKS ROLLING

1941

"U. S." FIRST TO GO 100%
TO RAYON FOR AIRPLANE
TIRES

1946

U.S. ROYAL FLEETWAY
100% RAYON
NOW BETTER THAN EVER!



U. S. Royal Fleetway plus U. S. Fleet
Service... the right combination for
lower cost per tire mile. Phone your
U. S. Truck Tire Distributor **TODAY!**

Listen to "Science Looks Forward"—new series of talks by the great scientists of America—on
the Philharmonic-Symphony Program. CBS network, Sunday afternoon, 3:00 to 4:30 E.S.T.



UNITED STATES RUBBER COMPANY

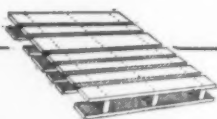
1230 Avenue of the Americas, Rockefeller Center, New York 20, N. Y.



Hand-in-glove

NEW "GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.

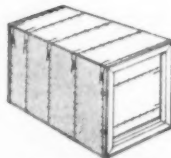


"Generalift"
Pallet

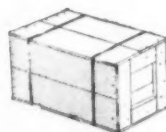


General
Corrugated
Box

NOTE: Shortage of timber products today is even more critical than during the war. This is due to adverse weather conditions, labor difficulties, pricing maladjustments, ear-marking and priority of lumber for erection of homes for veterans, etc. For these reasons, we, like so many others, cannot guarantee production and shipment in terms of usual schedules.



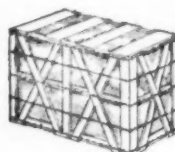
General All-Bound
Box



General Nailed Box



General Cleated
Corrugated Container



General Wirebound Crate

ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

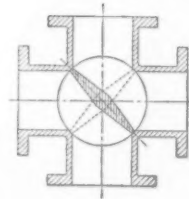
GENERAL Engineered Shipping Containers also give you snug fit . . . light weight . . . positive product protection!

GENERAL engineers are experienced in the scientific design of all types of shipping containers—from giant crates for machine assemblies to tiny boxes for precision parts—thoroughly experienced in the better packing of practically all types of products!

GENERAL Engineered Shipping Containers are today shipping products throughout the world. This frequently requires special construction and inner-blocking, protective coatings, moistureproof barriers, etc.

Write today. Let us tell you about GENERAL'S "Part of the Product" Plan. Learn how you, too, can save space, speed production and substantially cut shipping and packing costs.

FOUR-WAY TRANSFER VALVE

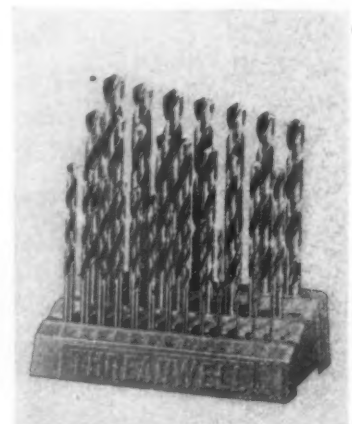


NEW 125-pound, single vane, quick-operating control valve for transferring chemicals, oil, paper pulp, sewage, water and other materials from one line to another, which can be manually or automatically operated, is announced by R-S Products Corp., Wayne Junction, Philadelphia 44, Pa. Valve can be fabricated from all types of metals in sizes from 4 to 72 inches. Illustration shows sectional view through body. This model is made of "A" metal, a tough, dense metal of uniform grain and high endurance limit. It is said to resist galling, "wire drawing" and the wearing action of abrasive materials.

BELLOWS TYPE PRESSURE GAGE

BELLOWS type low range pressure gage suitable for indicating draft pressures or any low pressures of gases or liquids that are not corrosive to bronze, is announced by Manning, Maxwell & Moore, Bridgeport, Conn. It is especially recommended for use in gas plants. Gage is supplied in 4½" and 6" phenol cases with 1/4" male pipe thread lower or back connection. Type 1188 P is supplied in pressure ranges from 10" of water up to 10 lbs. pressure. It is also supplied as a low range vacuum gage, Type 1188 V in vacuum ranges from 10" of water up to 20" of mercury vacuum.

HIGH SPEED TWIST DRILLS



COMPLETE line of high speed twist drills is announced by the Treadwell Tap & Die Co., Greenfield, Mass. Line includes high speed taper shank drills in all standard sizes up to 1½" dia., and high speed straight shank drills in taper lengths, wire gauge sizes and jobbers lengths. Sets are available in metal stands, as illustrated, and in folding metal containers. Bulletin No. 435 describes line in detail.

(Continued on page 168)



SKILTOOL CLINIC CUTS YOUR COSTS!

● Here is a wonderful opportunity for operating men to find out the newest ways to cut costs throughout your plant by wider use of fast-working SKILTOOLS on both production and maintenance. Your distributor will hold a SKILTOOL CLINIC in your plant. You'll see all the new SKILTOOLS in action . . . see how they make countless jobs easier . . . how they *step up the hourly output per worker*. A specially trained SKILTOOL Engineer will accompany your distributor at your clinic and work directly with your foremen in selecting the right tool for the job . . . give valuable tips on tool care . . . assist your staff in bringing down increasing hourly costs! Fill out the coupon now!

SKILSAW, INC.
5033-43 Elston Avenue, Chicago 30, Ill.
Factory Branches in All Principal Cities

Mail This Coupon Today!

SKILSAW, INC.
5033-43 Elston Ave., Chicago 30, Ill.

We would like to have our distributor conduct a cost-cutting SKILTOOL CLINIC in our plant on or

about (date).....

Name.....

Address.....

City.....State.....





Whatever G-E



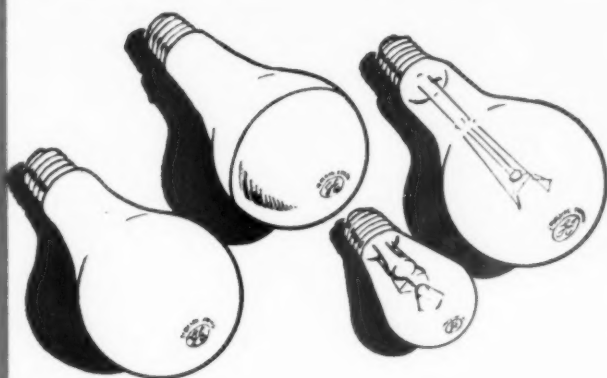
G-E's complete line includes everything in standard FLUORESCENT lamps from 14 to 100 watts, in white and colors. The G-E Slimline ranges from 42" to 96" in length, $\frac{3}{4}$ to 1 inch diameter; instant-starting, with single-pin base. G-E Circline will be made 8 $\frac{1}{2}$ ", 12" and 16" in diameter as conditions permit.



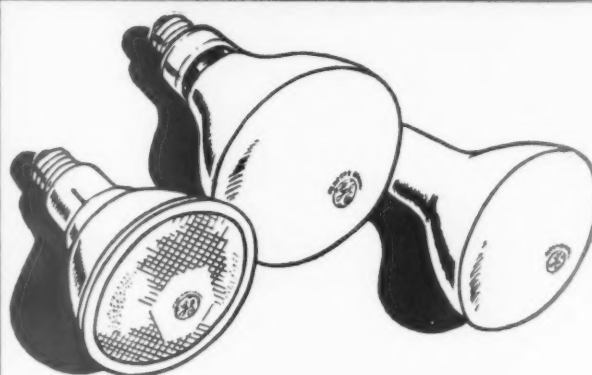
"High-efficiency" sums up the features of General Electric's MERCURY Lamps. Widely used for industrial lighting in high and medium-high bays, these arc-source lamps are made in 400, 1,000 and 3,000 watt sizes. The 1,000-watt (water-cooled) lamp finds many uses in searchlights, studios, photo-engraving:

Lamps you need for industrial uses

MAKES 'EM ALL!



G-E Filament Lamps for general lighting jobs are made in sizes from 6 to 1500 watts; candelabra, intermediate, medium or mogul screw bases, or bi-post base in certain sizes. Standard lamps operate on 115, 120 and 125 volt circuits. Others made for 230 and 250 volt circuits and for low voltage farm service.



Concentrated beams and wide-spread floodlighting beams are available in G-E *REFLECTOR* and *PROJECTOR* lamps. Reflector Spot Lamps serve to high-light store displays; Reflector Flood for a spread beam in interiors. Projector Spot and Flood Lamps serve similarly in outdoor uses.

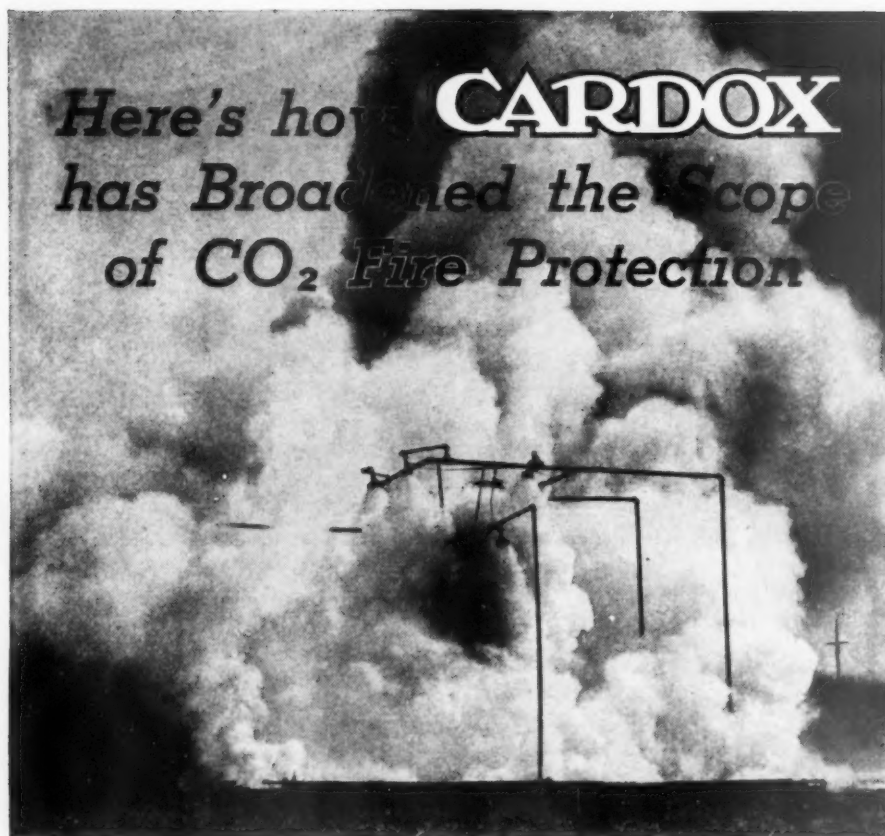
Sure, your problem may be different. Most lighting problems are. But General Electric engineers are ready to do their part. And they offer a wealth of impartial suggestions based on actual experience in hundreds of lighting jobs. They know lamps and lighting; know best how to help you get more for the lighting dollar. Save time and money—call your G-E Lamp office and get top results in quality lamps. And remember, research works constantly to make G-E Lamps *Stay Brighter Longer*.

G-E LAMPS



*Stay Brighter
Longer!*

GENERAL  ELECTRIC



Carbon dioxide has, of course, long been recognized as one of the fastest, most effective fire fighting agents. Its advantages as a non-damaging extinguishing medium, with no clean-up mess or time loss, give it an important plus value in many industries and situations.

The problem has been to make this dry, inert gas practicably available in fire fighting equipment equally capable of protecting small, multiple or very large hazards.

Cardox Fire Fighting Equipment . . . using its own unique methods of engineered control and application . . . has multiplied the applications of carbon dioxide as a fire fighting medium.

As a result of these distinctive Cardox developments, low pressure liquid carbon dioxide can be applied with equal facility in pounds or tons . . . making it entirely practical to use this fast, non-damaging medium (1) To protect banks of large transformers outdoors, (2) To provide tons of Cardox CO₂ on a high speed truck to guard widely scattered hazards, (3) To overwhelm vicious airplane crash fires fast anywhere on large airfields . . . making possible speedy rescue of plane personnel and salvage of costly equipment, (4) To

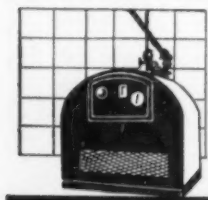
provide a single system capable of protecting multiple hazards throughout large plants, (5) To equip factories, hangars, etc. with a portable unit with sufficient wallop to deal with relatively large fires when seconds pay dividends. All Cardox Fire Fighting Equipment has one characteristic:

The distinctive Cardox method of control and engineered application of carbon dioxide, stored at 0°F. and 300 p.s.i. in a single storage unit containing from 1/4 to 125 tons of fire-destroying Cardox CO₂ . . . enough to handle even large fires and leave an ample reserve for new emergencies.

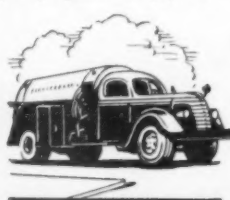
As a result of the removal of former limitations to the use of carbon dioxide by Cardox control and application, Cardox Fire Extinguishing Equipment can be engineered to provide protection for hazards indoors or out. We should welcome the opportunity of helping you evaluate accurately the place of Cardox Broadened CO₂ protection in your specific operation. Write for Bulletin No. 2556.

CARDOX CORPORATION BELL BUILDING • CHICAGO 1, ILLINOIS

District Offices in
New York • Philadelphia • Washington • Pittsburgh
Cleveland • Detroit • Cincinnati • Houston
San Francisco • Los Angeles • San Diego



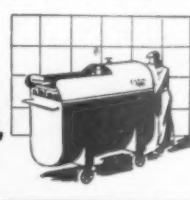
FIXED FIRE
EXTINGUISHING
SYSTEMS



FIRE TRUCK—
Tons of CO₂ on
Wheels



AIRPORT FIRE
TRUCK



TRANSITANK—
Capacity—750 pounds

PLATE NOSE HAND TRUCK

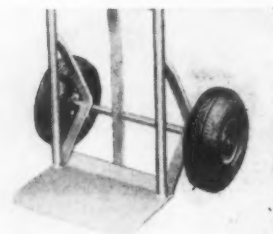
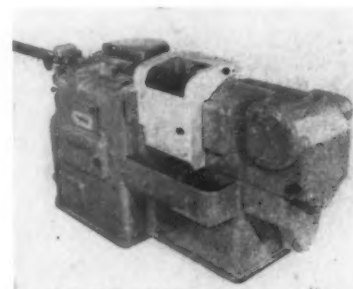


PLATE nose hand truck with pneumatic wheels is announced by the Rapids-Standard Co., Inc., Peoples Nat'l Bank Bldg., Grand Rapids, Mich., the solid nose making for the easier handling of cases, kegs and bags. Truck will handle 500 lb. load with ease. Overall height of truck is 46"; width, 20". Length of plate nose, 7 1/2". Steel, resinoid, or rubber wheels are available. These hand trucks are available with solid or open nose, single or double handle.

CELANESE ANNOUNCES PLASTIC MESH

DEVELOPMENT of plastic mesh known as Plastic Mesh Vimlite, is announced by the Celanese Plastics Corp., New York, N. Y. Bursting strength is 165 lbs. per square inch. It can be cut with ordinary knife or scissors. Maker states it has the quality of being self-fitting because of tendency to contract slightly. The original Vimlite developed before the war is a wire-reinforced cellulose acetate plastic glazing.

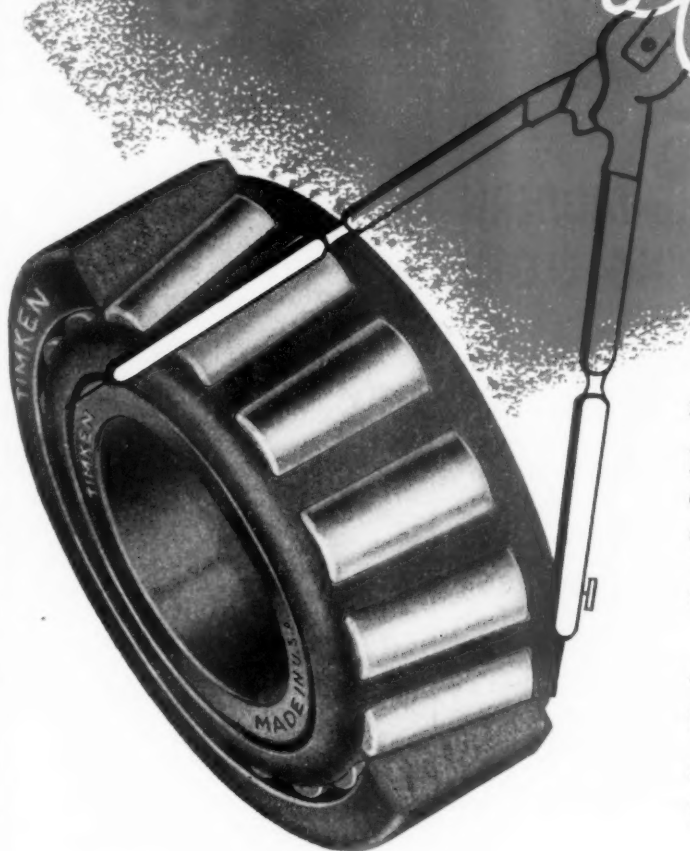
SINGLE SPINDLE SCREW MACHINE



INDEPENDENT control of 12 individual working tools permits carbide tooling to be used for all operations common to screw machines in the Tavnanes single spindle automatic screw machine, announced by Commentry Industries, Inc., 260 W. Broadway, New York 13, N. Y. Available working positions are divided into six stations for side slide operations and six turret positions. Turret tools can be rotated independently of the other when a turret unit of 6 revolving spindles is in use. Close tolerances are claimed. Machines are built in two capacities, the M-40 which accepts bars up to 1 5/8" diameter, and the M-60 which handles 2 3/8" diameter bar stock.

(Continued on page 170)

Buy the Bearings the Engineers Prefer
TIMKEN TAPERED ROLLER BEARINGS



As final Victory draws nearer in the months to come and the emphasis on war production gradually swings over to production for peace, more and more Timken Tapered Roller Bearings will become available to more and more manufacturers.

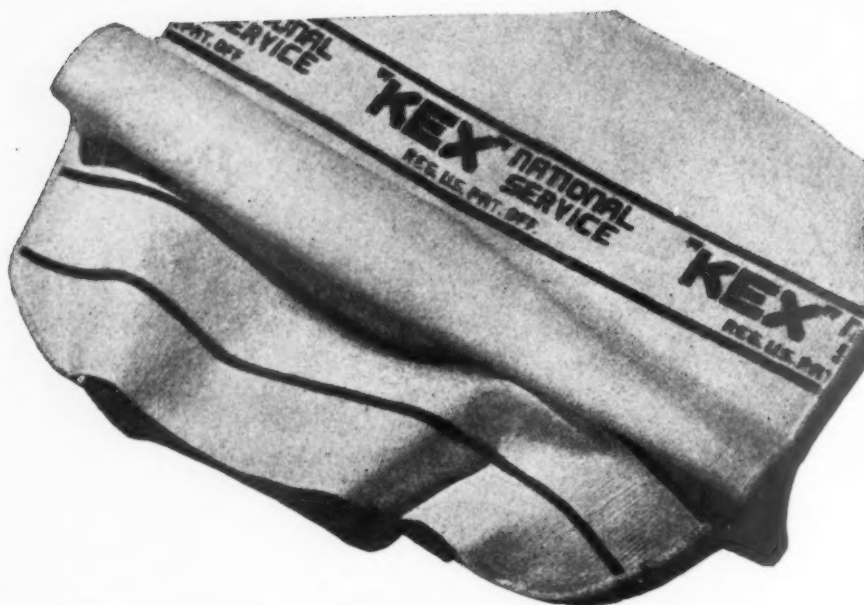
And they will be better bearings than ever before, for they will have profited from such tests as no bearings previously have been called upon to undergo.

Engineers who know their bearings always have recognized the sterling qualities of Timken Bearings, and from this recognition have sprung world-wide acceptance and preference.

Never did the trade-mark "TIMKEN" mean as much to the bearing user as it does today. Make sure it is stamped on every tapered roller bearing you buy.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

THE TIMKEN ROLLER BEARING
 COMPANY, CANTON 6, OHIO



how "KEX" THE MODERN WIPING CLOTH can cut your wiping costs

Unlike rags or waste, every square inch of a KEX Wiping Cloth is usable wiping surface—right out to the very edge. KEX Wiping Cloths absorb up to six times their weight in grease or oil. They have no buttons, hooks, hard seams, loose threads or any of the million-and-one things that make ordinary wiping materials so hazardous to use. KEX Wiping Cloths are soft, safe for delicate surfaces—yet tough enough for any job in the shop.

KEX Wiping Cloths are delivered as often as needed. They are fresh—chemically cleaned by a special high-heat process. You always have plenty of clean KEX Wiping Cloths on hand, in any of your plants no matter where located.



Rent KEX Wiping Cloths and Figure Your Profits

Try the KEX Wiping Cloth system, today! There's nothing to buy—no expensive inventory—just a low monthly rental. And the very first month you should show decided savings on wiping costs.

For complete information, phone your local KEX representative—or write KEX National Service, 295 Fifth Avenue, New York 16, N. Y.

"KEX" NATIONAL SERVICE
REG. U.S. PAT. OFF.

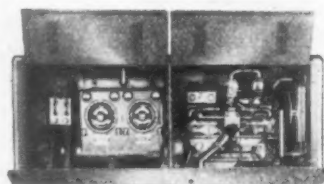
"KEX"
REG. U.S. PAT. OFF.
NATIONAL SERVICE
A CALLAWAY MILLS PRODUCT
INDUSTRIAL WIPING CLOTHS

WHEELED FIRE EXTINGUISHER



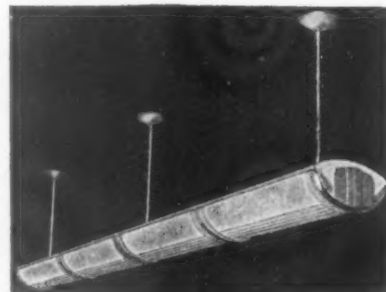
NEW model wheeled portable fire extinguishing unit with a capacity of 750 lbs. of liquid carbon dioxide, known as the Cardox Transittank, is being made by the Cardox Corp., 307 No. Michigan Ave., Chicago, Ill. Feature of the unit is extremely high application rate of 300 lbs. of carbon dioxide per minute from a single nozzle. Single operator can effectively handle it. Printed matter available.

TWO OPERATOR ARC WELDER



HOBART Bros. Co., Troy, Ohio, has developed a 2-operator gasoline engine driven arc welder by placing two of their 300 ampere generators on a common shaft and supplying separate excitation from a common exciter. Two operators can work independently since the engine is governed to maintain constant speed. The net idle running time of the engine is consequently reduced, effecting a higher overall economy.

INDIRECT LUMINAIRE



THE STAR, new luminous indirect lighting unit, is announced by the F. W. Wakefield Brass Co., Vermilion, O. Plaskon reflector is of such density that the lighted luminaire is of approximately same brightness as the illuminated ceiling. The Star makes use of 40 watt fluorescent lamps. Properly mounted and spaced, even lighting is achieved which manufacturer terms a skylike effect.

(Continued on page 174)

If you
make it of **WIRE**
make it of the best!

MILLIONS of buyers are eagerly looking forward to the many things long denied them by the war. And because this is America, they expect these peacetime products to be not merely as good as before but definitely better. Better in appearance, in efficiency, in durability, and reasonable in cost as well.

Steel wire for manufacturing—in which we specialize—is ready to help you meet this challenge. For this wire has been vastly improved by the urgency of war's demands. New and better steels have been developed, and new fabricating techniques have been perfected that now make it possible to produce wire—in any size and finish—that is not only more versatile than ever before but superior in both quality and performance.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY

San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

PIANO WIRE, sometimes called the "Aristocrat of Wires" represents the peak of attainment in the art of wire making. In it are combined extremely high tensile strength with the toughness and absolute soundness demanded by the requirements of the bass piano strings. The first piano wire produced in America was made at Worcester in 1850. Today it is one of the more than 400 different types of wire we produce.



THE SIZE YOU WANT



IT PAYS TO
KNOW *MORE*
ABOUT

HERCULES

ANOTHER
CONTR
BETT

is the
rosin
thoro

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requir
basic
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Her
useful
are re
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If s
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CHE
THE

WANT *WHEN YOU WANT IT!*

ANOTHER HERCULES
CONTRIBUTION TO
BETTER PAPER

For virtually any type of paper or paper product, Hercules has the size you want, *when you want it!*

This service to papermakers, maintained consistently even throughout the war, stems from the fact that Hercules

is the world's largest producer of rosin and rosin derivatives, and has at its command a thorough knowledge of rosin chemistry.

Hercules' wide range of sizing materials includes rosin sizes to meet the most diversified requirements. These sizes are available in three basic forms—dry, paste, and emulsion. Produced from a series of resins and modified resins, they can be tailor-made to meet practically every sizing need.

In addition, there are numerous Paracols* (wax and wax-resin emulsions) for sizing. Covering a wide range of compositions and properties, they impart special properties to the finished sheet.

Hercules Staybelite* size constitutes another useful development—when specialty papers are required which must be unusually bright, tasteless, and permanent.

If size or its application is important to you, why not let our technical representatives tell you about the many standard and specialty sizes made by Hercules.

*Reg. U. S. Pat. Off. by Hercules Powder Company

CHEMICAL MATERIALS FOR THE PAPER INDUSTRY

Other Hercules chemical materials
for the paper industry include:



Staybelite* Esters...

Wax additives for coating and laminating processes, modifiers for GRS and Neoprene latex for impregnating and laminating paper and board stocks.



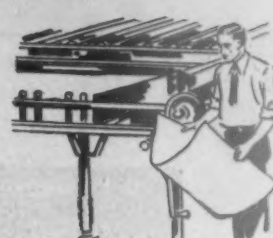
Hercolyn*

A liquid resin for transparentizing. Possessing excellent fiber-wetting properties, it is useful for the production of transparent and translucent papers.



Chemical Cotton...

Hercules chemical cotton is a pure cellulose, in loose or sheet form. Cleanliness and brightness are outstanding.



Casein...

Hercules casein is used as the binder in clay-coatings, and as an adhesive in laminants and paper converting.



Vinsol* Resin...

A dark-colored resin with a high melting point. Low in cost, it is economical as a stiffener for paperboard.



Chemicals...

These include sulphonated oils, foam killers, eveners, acids, alkalies, alum, and satin white.



FOR FURTHER DETAILS



Papermakers Chemical Department
HERCULES POWDER COMPANY
INCORPORATED
944 Market Street, Wilmington 99, Delaware

Please send information on _____

Name _____

Title _____

Company _____

Address _____

City _____ State _____

SELECT G-E FUSES

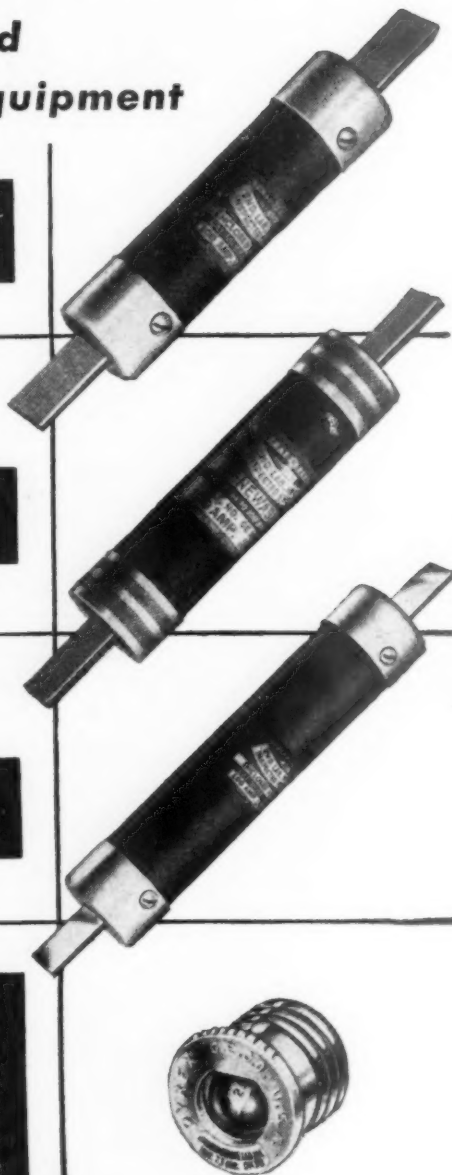
to guard
your electric equipment

G-E Non-renewable enclosed fuses
1-600 Amp., 250 V. or 600 V.

G-E Renewable enclosed fuses
3-600 Amp., 250 V. or 600 V.

G-E Silvend® Fuses
(silver-plated contacts)
3-600 Amp., 250 V. or 600 V.

G-E Pyrex® Plug Fuses have a one-piece, heat-resistant Pyrex top, and an insulated grip. Magnifying windows provide easy reading. Available in handy fuse dispenser cartons holding 5 fuses each: 3 to 30 amp., 125 volts.



Safeguard your electric equipment with G-E fuses. They provide reliable overload and short-circuit protection. They are made of the finest materials, and are thoroughly tested. They are the same fuses General Electric uses to protect its own equipment.

For further information, see the nearest G-E Merchandise Distributor or write to Section D-565-77, Appliance and Merchandise Dept., General Electric Company, Bridgeport, Connecticut.

*Trade-mark Reg. U.S. Pat. Off.

GENERAL ELECTRIC

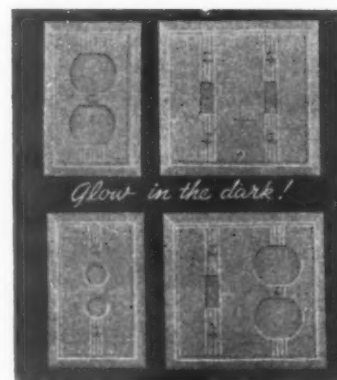
BUFFER AND GRINDER

THIS low pedestal type buffer and grinder for shop use, designed for grinding and buffing of long, odd shaped pieces, is announced by the Hobart Bros. Co., Motor Generator Div., Troy, Ohio.



There is over 40 inches of working space between wheels and low design of pedestal enables workers to sit at work. Grinders are fabricated from steel sheets rolled and electrically welded. The 3 horsepower motors are repulsion-induction if single phase or squirrel cage induction if 3-phase. They are non-stalling and operate at 1750 rpm.

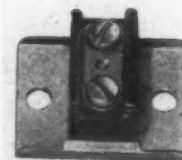
LUMINOUS SWITCH PLATES



LUMINOUS switch plates are announced by the Gits Molding Corporation, 4600 West Huron St., Chicago, Ill., styles being available for practically every type outlet. A few minutes of exposure to either artificial or daylight will cause the switch plates to emit a fascinating blue-white glow in the dark from 7 to 8 hours.

TYPE "M" TERMINAL BLOCKS

NEW type terminal block which is specifically designed for installations where it is necessary to conserve space, is announced by Curtis Development & Terminal Co., 1 No. Pulaski Road, Chicago, Ill.



Any number of terminals may be assembled from one to 24 and held rigid in a metal channel. Screw holes are not completely cut through block, thus permitting the base to be one solid insulator adjoining the metal channel. Mounting holes are in metal channel, only one in each end. Blocks have ample clearance and creepage distances for circuits carrying up to 300 volts, 10 amperes. Block can be supplied with or without marker strip.

(Continued on page 176)

Reed & Prince Recessed Head Screws and Drivers compared
with other makes of Recessed Screws and Drivers are
AS DIFFERENT AS DAY IS FROM NIGHT



*because Any Reed & Prince
Screw Driver or Bit fits any size
or style of Reed & Prince recessed
head screw or bolt.*

**"A HEAD
of the times"**



MANUFACTURING

Recessed and Slotted
Wood Screws Sheet Metal Screws
Machine Screws Stove Bolts

Also

Cap Screws Set Screws
Machine Screw Nuts Wing Nuts
Rivets and Burrs Rods
Screw Drivers and Bits
Specialties

Carefully designed — quality built,
under the supervision of Reed & Prince
engineers — the Reed & Prince Screw
differs from other types of recessed
head screws. Located at true center,
its recess automatically concentrates the
driving force along the center-line of
the screw. Regardless of size or style,
the face of the driver *exactly* matches
the recess, assuring equal distribution
of driving power over the ENTIRE area
of the recess.

Look for these Important Differences.

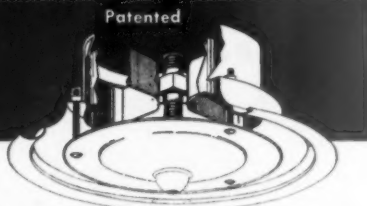
Demand the Reed & Prince recess —
your guarantee of CONTROLLED
manufacture.

REED & PRINCE MFG. CO.

WORCESTER, MASS.

CHICAGO, ILL.

Adjustable Air Diffusers



For better mixing of room and supply air, more uniform temperature throughout the occupied zone and noiseless air diffusion.

Whether they are used in heating, cooling, ventilating or combined systems, Kno-Draft Adjustable Air Diffusers can be adjusted quickly and accurately for system balancing and individual or seasonal requirements. By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone may be raised or lowered to secure any angle of air direction required. The built-in

Any desired condition at your fingertips.

Kno-Draft Type K Adjustable Air Diffuser with Type D volume damper

(Damper regulator protected by tamper proof cap)

volume damper varies the air outlet aperture uniformly without affecting the outlet velocity of diffusion pattern.

Free handbook: contains clear sketches, charts, dimension charts and instructive text that simplify the selection and installation of air diffusers. Please write Dept. P-15 for your copy, using your company letterhead.

W. B. CONNOR ENGINEERING CORP.

AIR RECOVERY • AIR PURIFICATION • AIR DIFFUSION

114 East 32nd Street

New York 16, N. Y.



More Production-- Lower Cost with TRICO



It's the men who use TRICO Fuses, Accessories, Automatic Oilers and Air Guns, who know best how TRICO Products help to increase production and lower operating expenses.

The combination of long experience, progressive management and skillfully directed production, results in greater values to the user and merits the recognition of leadership.

There's no substitute for quality and performance! Make sure you get both . . .

ORDER



"PREFERRED FOR QUALITY"

TRICO FUSE MFG. CO.
MILWAUKEE 12, WISCONSIN

IMPROVED EYE SAVERS



THIS is improved model 1-N Eye Saver, all-plastic safety goggle, announced by Watchmocket Optical Co., Inc., Providence 3, R.I. Molded plastic frame is roomy and comfortable, fits well, and may be worn directly over many styles of prescription glasses. Lenses are of tough Impax methacrylate which is said to exceed Federal specifications for impact resisting goggles, and to be as clear and free of distortion as fine optical glass.

HAUG POWER FACTOR REGULATOR

POWER factor regulator announced by Modern Control Equipment Co., 176 W. Adams St., Chicago,

is said to raise the power factor by taking the magnetizing current off the line with a negligible cost in operation and greatly reduce monthly power bill and to increase low voltage where due to poor power factor. Reactors and transformers are of dry type construction. No moving parts. Can be installed in almost any desired location. Made under AIEE specifications and NEMA standards. Printed matter available.

ADJUSTABLE PLASTIC QUADRANGLE



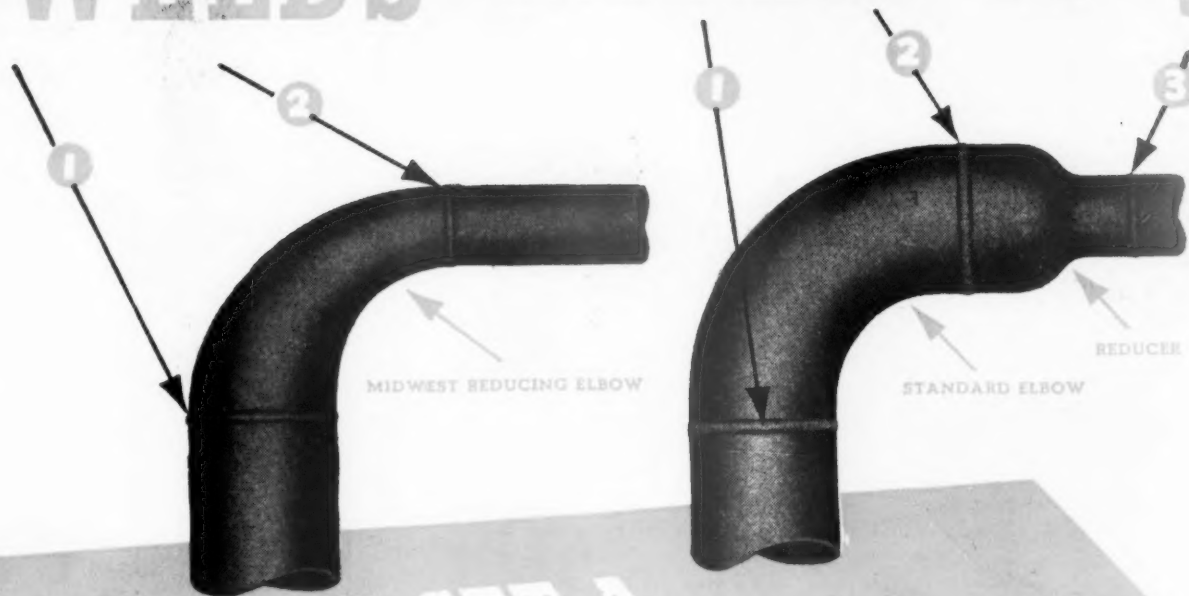
AN ADJUSTABLE quadrangle combining many drafting features not usually available in one instrument has been announced. The new plastic drafting tool is called the S&J Quadrangle by its designers, the Stewart-Jackson Instrument Company, A. G. Bartlett Building, Los Angeles 14, California.

Angles from 0° to 90°; pitch scales from 0 to 24/12; percentage slopes from 0% to 100%; sine or cosine functions and tangents may be found with the S&J Quadrangle. This instrument has eight drawing edges, is rectangular in shape, and may be used as a triangle.

The body and arm of the instrument blank so the owner may add his own most-used cutout symbols and measuring scale. The overall size of the drafting tool (4" x 11") is convenient for desk drawer, brief case, or coat pocket.

(Continued on page 178)

2 WELDS INSTEAD OF 3



AND YOU GET A
BETTER PIPING JOB

MIDWEST REDUCING WELDING ELBOW

SAVES WELDING
SAVES MONEY
SAVES TIME
REDUCES TURBULENCE
IMPROVES APPEARANCE

One weld is eliminated when the Midwest Reducing Elbow is used to change both direction and pipe size in a welded pipe line . . . you make only two welds instead of three. This exclusive Midwest Fitting takes the place of both a standard elbow and a reducer, as shown above. This saves time and money, produces a smoother, cleaner, better appearing job. In addition, the gradual reduction, smooth curve and absence of abrupt neck reduce turbulence. Insulation is also easier.

All the advantages of Midwest Standard Elbows are to be found in Midwest Reducing Elbows . . . unusual dimensional accuracy, beneficial effect of working metal in compression, stress relieving, etc. Center-to-end dimensions are the same as for standard elbows with which they are interchangeable.

This reducing elbow is one of many Midwest Welding Fittings designed to reduce the cost and improve the quality of welded piping. Write for Bulletin WF-41 for complete information.

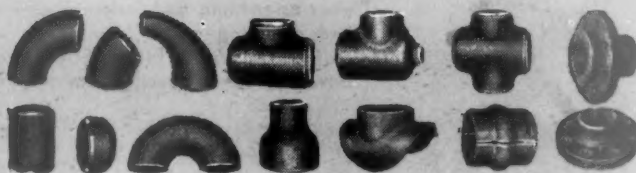
MIDWEST

PIPING & SUPPLY COMPANY, Inc.

Main Office: 1450 South Second St., St. Louis 4, Mo.

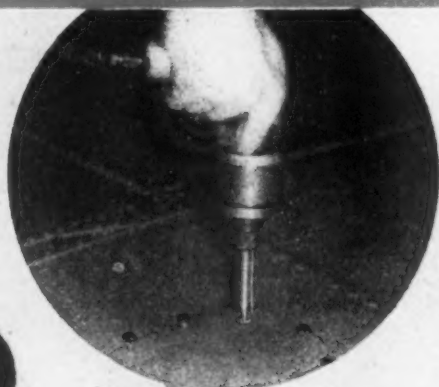
Sales Offices: New York 7-30 Church St. • Chicago 3-645
Marquette Bldg. • Los Angeles 33-520 Anderson St. •
Houston 2-229 Shell Bldg. • Tulsa 3-533 Mayo Bldg.
• Atlanta 3 - Red Rock Bldg. • South. Boston 27 -
426 First St. • Distributors in Many Cities.

MIDWEST WELDING FITTINGS IMPROVE
DESIGN AND REDUCE PIPING COSTS



CUT LABOR COSTS

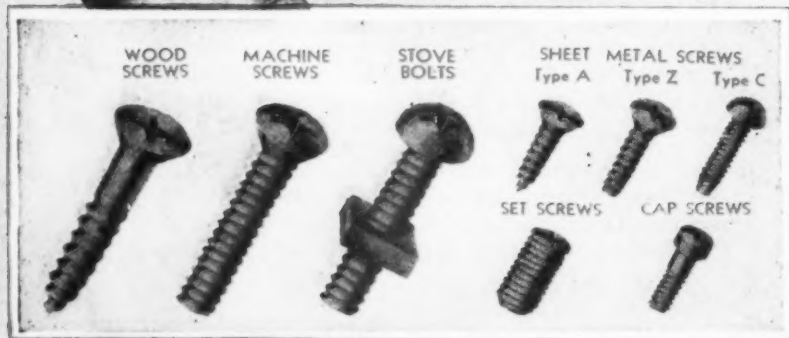
Drive by Power



*Save up to 50%
in fastening time
with...*

HOLTITE
PHILLIPS
SCREWS & BOLTS

Cut screw driving man hours in half! Use power drivers safely, even on finished parts. Engineered recess in head of these modern screws fully engages the mated tapered bit which does not slip, slide or jump out to gouge work or injure operator. Change from slow, costly, hazardous hand driving to the modern, economical method of fastening.



Now is the time to reduce every possible labor cost — to effect every possible economy in the manufacture of your product. Carefully analyze your assembling and fastening operations. You'll find a saving of 50% and over if HOLTITE-Phillips Recessed Head Screws and Bolts are driven by power. Specify them on your next order.

CONTINENTAL

SCREW CO. New Bedford, Mass., U.S.A.

NEW TAPPING MACHINE



ILLUSTRATION shows new type U Electric - Air controlled tapping machine. It is said to offer every conceivable method of control and fixture application. Electric - Air control increases sensitivity

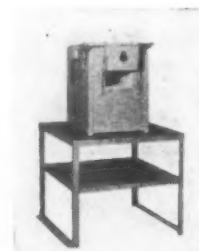
in the application of power and permits extreme accuracy in depth of stroke. Machines are available in three sizes: No. 1-UT, rated capacity of #2 to 3/16" in mild steel; No. 2-UT, #6 to 5/16"; and No. 3-UT, #10 to 3/8" N.F. R. G. Has-kins Co., 615 South California Ave., Chicago, Ill.

MASTER GAGE BLOCKS



NEW "Tool Makers" set of five Ell-strom master gage blocks, unconditionally guaranteed accurate to plus or minus eight millionths of an inch, is announced by Dearborn Gage Co., 22038 Beech St., Dearborn, Mich. Available in .0625, .125, .0250, .500 and 1 inch, the set will make 31 combinations in 1/16" steps up to 1-15/16. Gaging surfaces are chromium plated.

SMALL HEAT TREATING FURNACE



TWO new optional features have been added to Muffle Type electric furnaces made by the Cooley Electric Mfg. Corp., Indianapolis, Ind. Standard furnace is made with hinged door

which when opened forms a loading shelf. Alternate design incorporates a counterweighted vertically operated door for particular use where only partial door opening is required. Second feature is heavy gauge structural steel stand of welded construction, which provides shelf for storage space. Furnaces are available which when opened forms a loading hinged door.

(Continued on page 180)

FOR THESE FAMOUS M.S.A. RESPIRATORS

ALL U. S. BUREAU OF MINES-APPROVED



M.S.A. Comfo CHEMICAL CARTRIDGE RESPIRATOR

Protects against harmful concentrations of light organic vapors in degreasing operations, general use of solvents, paint thinners, etc. Approval No. 2301.



M.S.A. Comfo AIRLINE RESPIRATOR

Supplied-air type, with control valve and quick-release connection, for protection against many hazardous air contaminants. Approval No. 1909.



M.S.A. Comfo METAL FUME RESPIRATOR

Protection against breathing harmful fumes from molten metals, in burning, welding, cutting, pouring, etc. Approval No. 2139.



M.S.A. Comfo DUST RESPIRATOR

This famous approved dust respirator—guards lungs against breathing ALL DUSTS. Lightweight, durable. Approval No. 2133.

this **NEW**
FACEPIECE with greater
comfort and self-adjusting seal

Soft inner lip seals over facial contours—keeps air impurities outside!

Made of highest quality Neoprene—easily cleaned and sterilized. Long wearing! Resistant to solvents, grease and skin oils.

Unique bridge strap automatically adjusts facepiece shape to fit wearer's face!

Molded inner chin pocket makes positioning facepiece easy—cushioned fit is positive, always!

THE **M.S.A.**

Comfo **CUSHIONED
FACEPIECE**

New easy fit—new wearing comfort—new design—engineering for finer facepiece service! The M.S.A. Comfo Cushioned Facepiece is a complete departure from previous standards. It is soft and flexible; *self-adjusting* to the face through unique fitting action of inner bridge strap; dust-tight and gas-tight with absolutely no pressure points; adaptable to all facial contours. For better acceptance on the job, specify the Comfo Cushioned Facepiece, on U.S. Bureau of Mines-approved M.S.A. Respirators!



MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS · PITTSBURGH 8, PA.

DISTRICT REPRESENTATIVES IN PRINCIPAL CITIES

IN CANADA

MINE SAFETY APPLIANCES COMPANY OF CANADA, LIMITED
TORONTO . . . MONTREAL . . . CALGARY . . . VANCOUVER . . . NEW GLASGOW, N. S.

HARASSED



with
WASHER
troubles?

Take it easy, mister! There's an easy solution to your problem of Washers and Stampings.

Just send your blue-prints or specifications to us. For more than 25 years, we have specialized in producing Special Washers and Small Stampings, from steel, brass, copper and other metals. We have the "know-how" and the equipment to handle your requirements.

If one of our 10,000 sets of tools won't fill the bill, we'll make up special designs for you at reasonable cost.

Also a full line of Standard Washers—U.S.S., S.A.E., Burrs, Etc.—in kegs or cartons.

THE **MASTER PRODUCTS CO.**

6400 PARK AVE. CLEVELAND 5, OHIO

NEW SHOVEL-CRANE



POSTWAR shovel and crane, the TL-20, is announced by The Thev Shovel Co., Lorain, Ohio. It can be equipped with choice of 5 interchangeable booms and 10 different types of mountings. Turntable unit enables each major component to be removed as a unit and replaced with similar complete unit. It may be mounted on crawler or rubber-tire mountings. For crane-lifting purposes it comes complete with all equipment and accessories including two-piece all-welded boom.

BELLOWS DIFFERENTIAL FLOW METER

The new instrument will be made as a mechanical flow meter, as an electric flowmeter, and as a pneumatic-Transmission flow meter in a complete line of recording, indicating, integrating and automatic controlling models. The meter body, operating on a new principle, requires no mercury in its operation. Bulletin F1603 describes the new instrument.

BELLOWS differential flow meter has been added to its line of mercury manometer flow meters by

the Bristol Co., Waterbury, Conn.

RATCHET DRILL-DRIVER

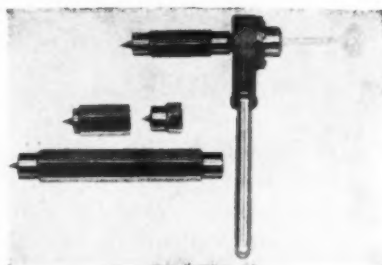


ILLUSTRATION shows new "Liberty" ratchet drill-driver announced by Techtman Industries, 714 W. Wisconsin Ave., Milwaukee, Wis. Designed for drilling between studs and joists of restricted spaces, tool is said to give positive feed at each turn of the drill bit. Compact head allows centering of holes within 1/4" of nearest obstruction. Any standard wood bit can be used. Steel drills can be used with an adapter chuck. Though intended primarily for use on wood members, steel plates or beams can be drilled by reducing the feed.

READY MIXED CHROME PAINT

NEAR approach to natural silver chrome finish in a ready-mixed paint is announced by Alumaton Corp., 1523 Grande Vista, Los Angeles 23, Calif. Patented stabilizer used gives package stability and prevents paint from darkening. Chromatone is packaged ready for indoor or outdoor application on metal, wood, glass and other hard surfaces. Paint is said to set in 20 minutes, dry in 2-4 hours, and be both rust, and heat resistant.

DISCHARGE CHECK VALVE

ILLUSTRATION

shows discharge check valve designed to give positive protection against back surge of discharge lines carrying steam, sludge, waste water and other waste liquids in gravity flow installations, introduced by J. A. Zurn Mfg. Co., Erie, Pa. Swing check flap suspended from full floating pin fulcrum to insure positive full surface contact between ground face of flap and flap seat, assures non-fouling of the valve. Valves are available with 1880 deg., 105 deg., or 90 deg. bodies made of cast bronze, steel, semi-steel, cast iron and alloyed metals.

(Continued on page 182)



AMERICAN CORDAGE PRODUCTS

A Complete Line

**ROPE • TWINE • OAKUM
PACKING**



AMERICAN MANUFACTURING CO.

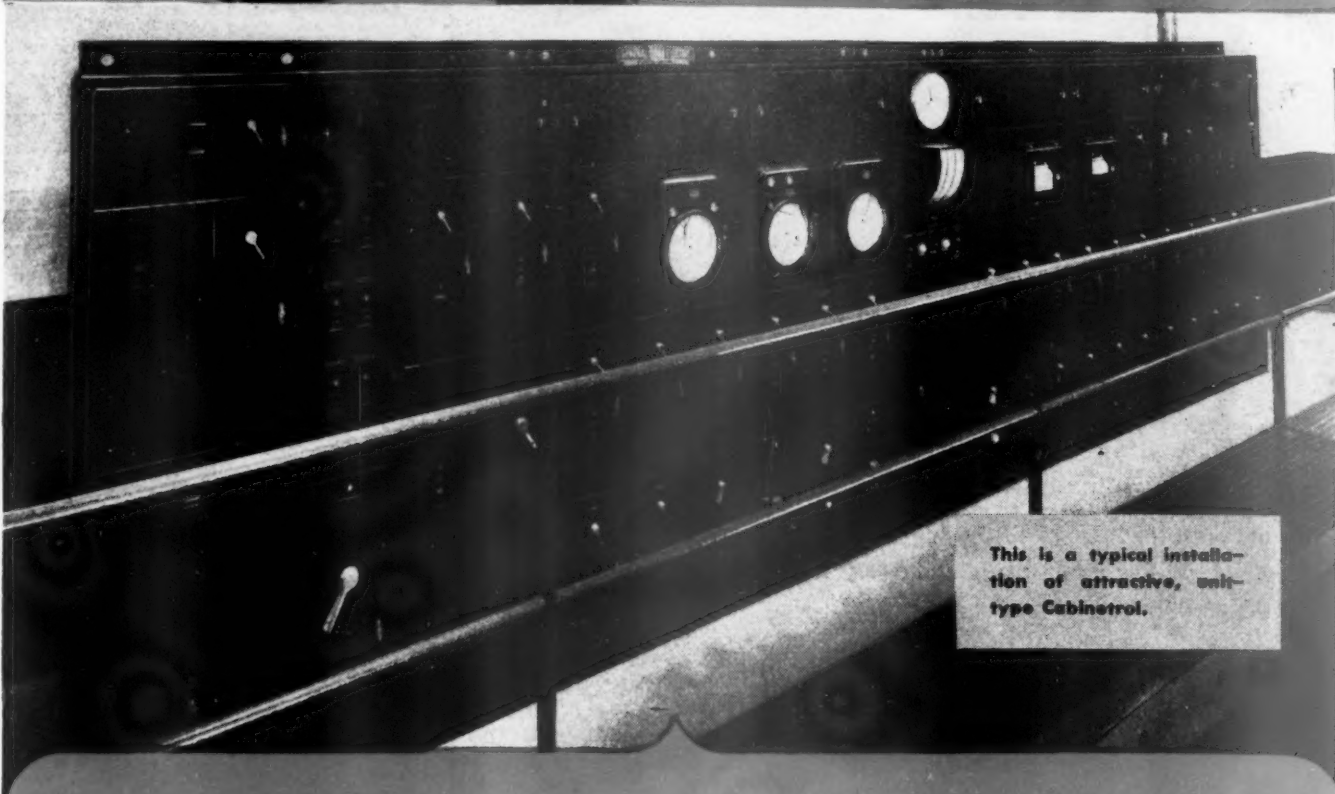
BROOKLYN 22, N. Y.

Branch Factories:

ST. LOUIS CORDAGE MILLS, St. Louis 4, Mo.
DELAWARE RIVER JUTE MILLS, Phila. 48, Pa.

Sales Offices: Baltimore • Boston • Chicago
Houston • New Orleans • Philadelphia

HODGE-PODGE CONTROL IS EXPENSIVE!



Trim, Modern CABINETROL Cuts Installation Time and Cost

Rambling, space-taking racks are a thing of the past. Control in the *modern* plant is compact, centralized G-E Cabinetrol. It's attractive in design, safe to operate, and it costs no more!

Cabinetrol saves installation time and expense because it's a single, self-supporting unit. No cumbersome frames—no cluttered walls. Just one attractive, all-metal unit that will greatly enhance the appearance of your mill.

The savings in installation cost that you get with Cabinetrol usually far outweigh its higher original cost. Only two operations are necessary—placing the unit in the designated location and connecting external power, motor, and control leads.

IT'S PRE-ENGINEERED

Cabinetrol is based on the use of standard enclosures equipped with the right combination of standard control devices. Each unit is pre-engineered to meet your specific requirements. All starters and accessory equipment necessary to your application are incorporated in the Cabinetrol unit before it is shipped.

PROTECTS YOUR OPERATORS

Because metal-enclosed Cabinetrol is completely deadfront, it offers your operators and servicemen maximum protection. Each motor control is installed in an individual sheet-steel compartment with an interlocking door. Operating mechanisms for motor-circuit switches and air circuit-breakers are available from the front of the panel.

LET US HELP YOU equip your plant with co-ordinated control. We'll be glad to work with you now—to provide a Cabinetrol system specially engineered for your plant—and, if you desire, to help you fit Cabinetrol into your over-all plans.

If you'd like more facts about Cabinetrol ask for Bulletin GEA-3856. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

G-E INDUSTRIAL CONTROL

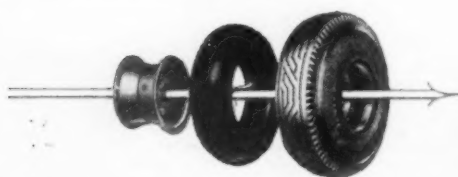
GENERAL ELECTRIC

LOADS AND EQUIPMENT ROLL EASIER... FASTER ON GENERAL INDUSTRIAL PNEUMATICS

● Material handling trucks and equipment without Generals' mobility are obsolete when purchased.

General is the only Industrial Pneumatic giving you the extra-capacity wide-base rim... heavy duty tire and separate tube *assembled as a quick-demountable wheel unit.*

- ★ Rolls easier, faster over rough, smooth or soft surfaces.
- ★ Stops cargo spillage, breakage and equipment breakdowns due to jolting.
- ★ Ends floor wear.
- ★ Reduces maintenance.



FACTORY ASSEMBLED! WHEEL • TUBE • TIRE
SPECIFY General Industrial Pneumatics on the new plant equipment you buy.

Dept. 3
THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO

8" to 22" o. d. for
loads of
180-1900 lbs.
per tire.
U. S. Army
Air Corps Standard

NEW

PASSENGER "AEROSTAND"

Designed and built by
PACIFIC ENGINEERING CORP., Los Angeles

Equipped with 16 x 5.00-8
GENERAL INDUSTRIAL PNEUMATICS

INDUSTRIAL PNEUMATIC TIRE-TUBE-WHEEL UNITS

SINTERED ALNICO COMPONENTS

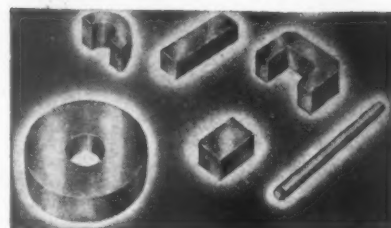


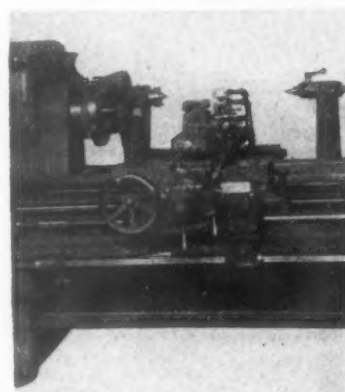
ILLUSTRATION shows small magnet sizes and odd shapes in sintered Alnico II produced by Stackpole Carbon Co., St. Mary's, Pa., which are said to offer magnetic properties equivalent to those of the cast product. Manufacturer states sintered Alnico II offers advantages in uniformity characteristics and greater mechanical strength in weights up to two ounces.

PORTABLE CLEATED BELT BOOSTER

other solid objects from one level to another, is announced by Island Equipment Corp., 101 Park Ave., New York 17, N. Y. Unit consists of an adjustable frame which can be elevated from 10 to 45 deg.—maximum elevation 16 ft. Endless cleated belt travels at 50 fpm. Belt is operated through a chain drive by electric motor which is unit of the frame.

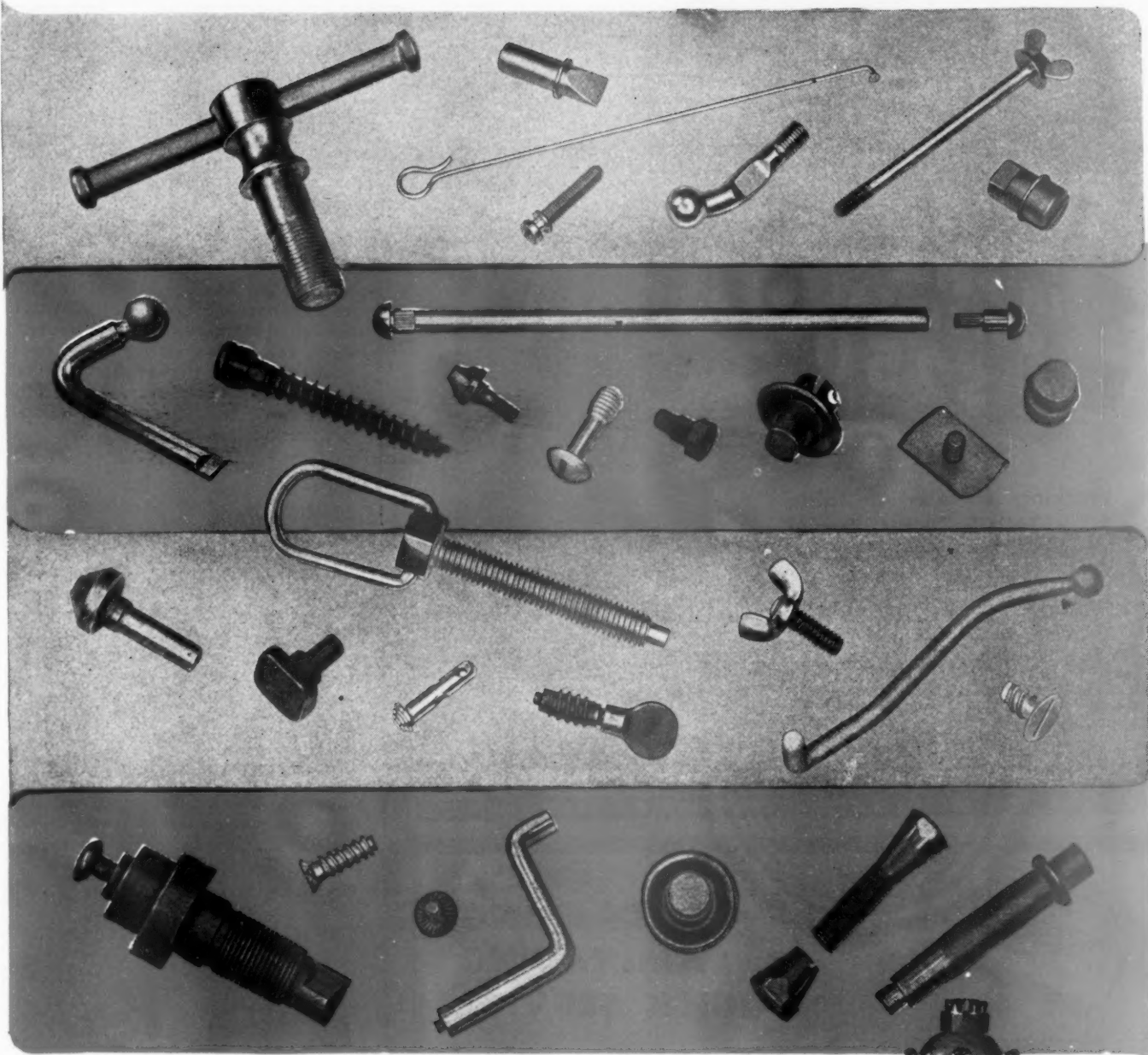
ELEVATING conveyor called the "Island Ultimate Belt Booster" for conveying pack- ages, boxes or

HYDRAULIC PROFILING MACHINE



HYDRAULIC profiling and duplicating machine of simple construction and versatile operation is announced by the Springfield Machine Tool Co., Springfield, Ohio. It is shown here as integral part of a Springfield 20" medium duty lathe on an 8 ft. bed, for hydraulic duplicating and tracing. Other sizes are available. Maker states machine will duplicate any job from bottle molds to complicated forms and will make either interior or exterior duplication. Any type of template may be used. It is a simple matter to disengage profiling arrangement, insert regular cutting tool and operate machine on regular lathe work.

(Continued on page 184)



HAND US YOUR HEADACHES

Odd shapes and sizes often cause you a lot of trouble and expense.

But *National Technical Service* may be able to help you with these problem jobs. Specializing in cold-heading "Specials", which previously required slower and more costly processes, this service has proved extremely helpful to many manufacturers. (See samples above)

Not only have we saved money and time for our customers, but often a stronger, better part has resulted.

Consult us about your "Special" headache.



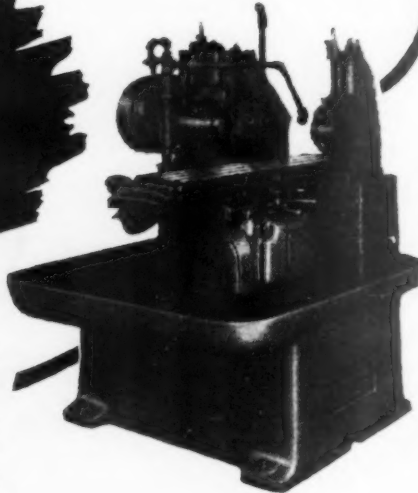
National
HEADED AND THREADED
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

Special Low Price!

USED CINCINNATI 18" AUTOMATIC MILLER

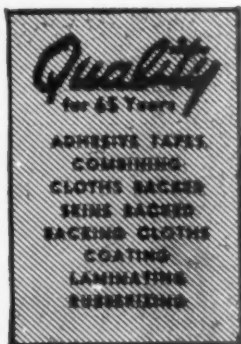
**REDUCED
IN PRICE FOR
QUICK SALE
\$250**



Working surface of table 8" x 36", 3 T-slots. Travel of table 18". Cross adjustment of headstock 5½", tailstock 3". Distance of top of table to center of spindle 9" maximum, 3" minimum. Weight 2900 pounds.

Write for Illustrated Folder of Other Best Buys in Botwinik Machine Tools.

BOTWINIK BROS. Inc.
363 WELTON STREET, NEW HAVEN 9, CONN.



CHICAGO, ILL.
H. Rabin, 30 No. LaSalle St.
LOS ANGELES, CAL.
A. B. Boyd Co., 743 E. 14th St.
PETERSBURG, VA.
Wm. A. Bragg, 224 No. Sycamore St.
PORTLAND, ORE.
A. B. Boyd Co., S. E. Union & Morrison
SAN FRANCISCO, CAL.
A. B. Boyd Co., 1235 Howard St.
SEATTLE, WASH.
A. B. Boyd Co., 404 Dexter Ave.
ST. LOUIS, MO.
C. E. Wilkins, 1402 Locust St.
WALLASTON, MASS.
S. B. Scott, 123 Elm St.
CAPE TOWN, S. A.
K. Stein Agency Co., 12 Plain St.

COATING LAMINATING QUICK SERVICE

ADHESIVE and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular needs.

Peters Bros.
RUBBER COMPANY, INC.
160 160 JOHN ST. Brooklyn, N.Y.
ESTABLISHED 3 GENERATIONS

STEEL HARDENING FURNACE

ILLUSTRATION

shows steel hardening furnace, Size 5, announced by The Sentry Co., Foxboro, Mass. It has muffle chamber 7" high by 8⅞" wide and 20" deep. Manufacturer states high speed steel tools up to 5" x 7" x 14" maximum size can be hardened completely free from scale or carburization. Furnace is mounted on cast iron pedestal. Overall dimensions, not including door lever arm, are 36" wide, 48" deep and 68" high with the hearth 46" above the floor.

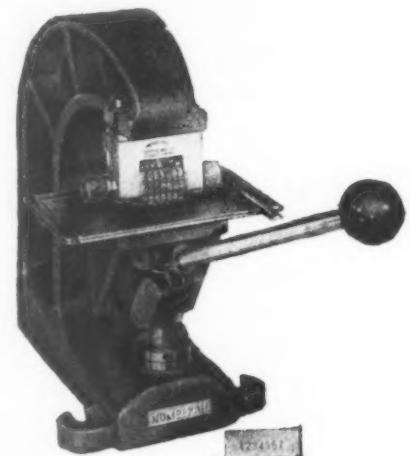


ANTI-CORROSION PROTECTIVE COATING

AIR DRYING protective coating, highly resistant to acids, alkalies, chlorides, oils, brine, oxygen,

gasoline and alcohol solutions called Cotoid, has been developed by Lithgow Corp., 333 West 40th Place, Chicago, Ill. Application results in tough, hard, elastic finish, which after air or force drying, is tasteless and odorless. Maker states it has been found practical for protecting walls, wood or steel structure work, and can be used for coating inside and outside surfaces of tanks used for corrosive solutions. Bake-on type is available. Applied by spraying; can be applied by dipping, flowing or roller coating.

BENCH HAND-TOGGLE PRESS



BENCH hand toggle press, Model 97, for numbering, marking and stamping, is announced by Numberall Stamp & Tool Co., Huguenot Park, Staten Island, New York. It exerts pressures up to 10 tons. Seven ¼" characters or 14⅞" characters can be sunk into mild steel with press—more in softer materials. Attachments such as cut off shears, wire cut off, and punch and die for making tags with hole, available.

(Continued on page 186)



REVOLUTIONARY NEW WOODWORTH THREAD RING GAGE

***"It Starts round and Stays round
with every adjustment!"***

The new Woodworth Adjustable Thread Ring Gage offers many sensational improvements over those of conventional design.

Proven by actual tests to be mathematically round through the full range of adjustments, its revolutionary design permits a degree of accuracy in thread inspections never before obtained.

Step up your production—reduce your manufacturing costs—with this new Woodworth instrument of accuracy.

5-PLUS FEATURES

- 1** GREATER ACCURACY AND STABILITY
- 2** LONGER WEAR LIFE
- 3** LESS WEIGHT
- 4** POSITIVE IDENTIFICATION
- 5** POSITIVE ADJUSTMENT

ACCURACY YOU CAN TRUST

Wire or write for Folder No. 46R

WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION, 1300 E. NINE MILE ROAD • DETROIT 20, MICHIGAN

PRECISION GAGES • PRECISION MACHINE AND AIRCRAFT PARTS • DIAPHRAGM CHUCKS • ADJUSTABLE CLAMPING JIGS • SPECIAL TOOLS



The CHAMPION Fluorescent and Incandescent Lamp distributor in your locality is the kind of distributor who knows that *your* best interests are *his* best interests. He has selected Champion Lamps for these practical reasons:

- 1 **Champion Quality** — guaranteed to equal or exceed Federal Specifications and backed up by the production resources and the forty-six years of lamp-making experience of one of the largest lamp manufacturers in the industry.
- 2 **Champion Economy** — the result of careful planning and specialization on the job of getting lamps to industry at minimum cost. The most lighting and the best lamps for your money is the objective of the Champion organization and the Champion distributor.
- 3 **Champion Service** — trained lighting experts in the field to co-operate with you and your supplier in order that you may be assured intelligent and efficient attention to your individual lighting and lamp needs.

Once you try Champion Lamps you'll appreciate these advantages offered you by the Champion distributor. May we give you his name and telephone number?

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.



DRILL CHIP BREAKER

IMPROVED drill chip breaker which breaks the chip at each revolution of the drill is introduced by the Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit, Mich. It breaks chips into uniform, small



pieces that are easily carried up the flutes of the drill. It can be used vertically, horizontally or at any angle at which housing can be kept stationary while the drill is rotating. Arm is provided to prevent rotation of the housing. Where space permits, breaker can be used in multiple spindle heads. Bulletin 28161 describes the breaker.

AIR TYPE COLLET INDEXING CHUCK

AIR operated collet indexing chuck designed to provide ease of operation and to eliminate errors in indexing,

is announced by Redmer Air Devices Corp., 601 W. Washington Blvd., Chicago Ill. It is not necessary to remove the fixture from the bed of the machine in changing over to another position. Indexing is manual. Collet is air operated, and has capacity up to and including 2 inches. Fixture can be used as a regular holding fixture without the indexing for drilling, milling, tapping, etc. Index chuck has 2-3-4-5-6-8-9-12 positioning indices as standard equipment.

TUBE TESTING PRESS



NEW 25-ton hydraulic tube testing press, designed for testing tubes up to 3 1/4" i.d. and 48" long at 4800# sq. in., hydro-static internal pressure, is announced by Beatty Machine & Mfg. Co., Hammond, Ind. It can be used for other diameters and lengths within limitations of pressing and spacing capacities, with proper ram attachments. Pressing speed, 34" per min.; return speed, 68" per min.

(Continued on page 194)



For Brilliant Beauty that never wears dim
Superior Stainless Strip Steel

Wherever lustrous stainless steel enhances appearance in exterior architectural design, or brings gleaming elegance to modern interiors, there you will find many applications for the special advantages of Superior Stainless Strip Steel. Possessing every stainless quality, this precision-made steel is supplied in *long coils* . . . furnished in grades, tempers and dimensions exactly controlled for the uniformity that benefits your product fabrication.

28 pages of facts
you can use—write
for the Superior
Brochure!



Superior Steel
CORPORATION

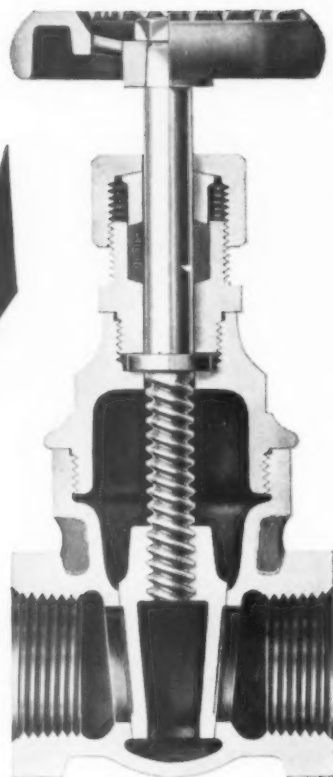
CARNEGIE, PENNSYLVANIA

Every feature you want in a **BRONZE GATE VALVE**

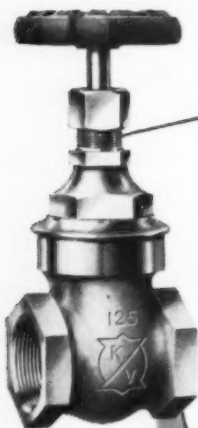
is in this
**KENNEDY
DESIGN**

Simplicity . . . and sturdiness . . . these are the two outstanding design characteristics of Kennedy Bronze Gate Valves. There are no small, quick-wearing parts that might cause undue maintenance expense. The heavy bodies and bonnets, large stems with heavily proportioned contact threads, long-proven disc mechanisms, large bonnet hexes and wide pipe-end hexes all combine to provide extra strength, long life and low maintenance expense.

You can obtain these extra-value Kennedy Bronze Gate Valves in a complete range of sizes and for all pressures up to 300-lb. steam. They are available with non-rising stem, rising stem, quick-operating lever and outside screw and yoke . . . screwed and flanged . . . inside screwed bonnet and union bonnet . . . a type for every standard requirement. The 240 page Kennedy Catalog describes these valves in detail . . . your copy sent on request.



Buy From Our Distributor



YOU WANT THESE VALVE FEATURES ... you'll find them in this KENNEDY design

- ① **Generous Strength . . .**
Body and bonnet are of high-grade dense metal with ample thickness and rounded fillets. Stem has large diameter and extra large number of contact threads.
- ② **Easy Operation . . .**
Stem and stem contact surfaces are accurately threaded. Deep stuffing boxes permit tightness without undue pressure on packing. Large handwheel gives firm, comfortable grip.
- ③ **Lasting Tightness . . .**
Discs and seats seat accurately, and their sturdy design resists distortion and has special provisions for take-up of wear.
- ④ **Long Life . . .**
Many Kennedy valves have been in daily use a quarter century and more.
- ⑤ **Convenient Repacking . . .**
Glands and packing are easily accessible.
- ⑥ **Economical Maintenance . . .**
Long wear built into all parts, and adjustments or other attention are seldom required.



THE KENNEDY VALVE MFG. CO.
Elmira, New York

KV-113

KENNEDY *valves - pipe fittings - fire hydrants*

GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

STANDARD MAKES

STANDARD MODELS

CENTERLESS GRINDERS

Do you need additional machine tools for new operations . . . or to speed up old? Thousands of machine tools, like these grinders, are surplus and available to you at low cost. The equipment is modern; much of it unused, some only slightly used. Look today for places to use this equipment. You will be rendering a vitally important service—not only to yourself as a producer and taxpayer—but also to the country as a whole. These tools *must* go to work to produce badly needed peace time products.

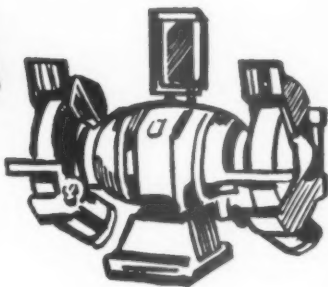
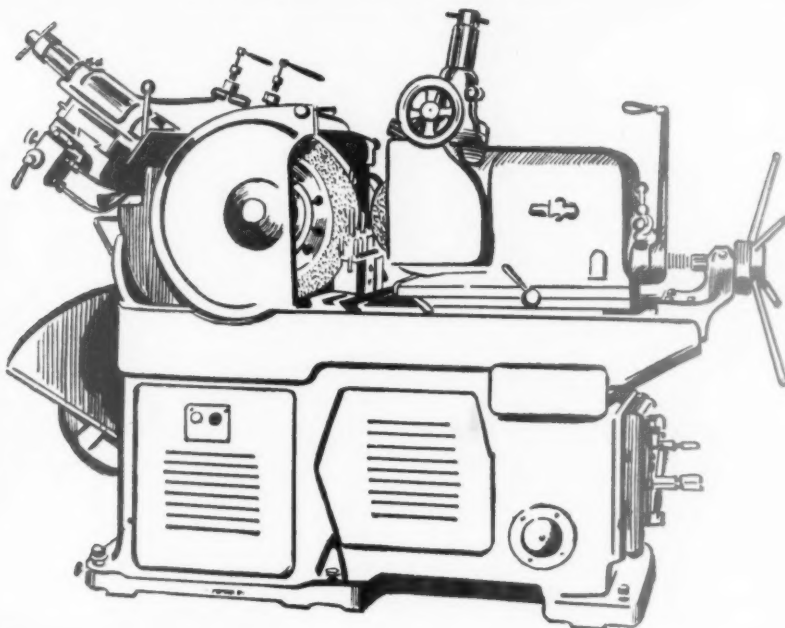
BENCH GRINDERS

BROWN-BROCKMEYER: 2-wheel, electric bench grinders in 8" and 10" wheel sizes located in San Antonio Regional Office of War Assets Administration.

VETERANS OF WORLD WAR II

To help you in purchasing surplus property, veterans' units have been established in each War Assets Administration Regional Office.

CINCINNATI CENTERLESS GRINDERS: Model No. 2 located in Detroit, Chicago, Cleveland, Boston, Philadelphia and New York; Model No. 3 located in Detroit, Chicago, Cleveland, and Boston Regional Offices.



MAIL TODAY

To War Assets Administration:

Please send me information on the availability of the following types of grinders:

MAKE	MODEL	SIZE
.....	Centerless grinders
.....	Bench grinders
.....grinders (other)

Name.....

Firm.....

Address.....

City.....State.....

277-3

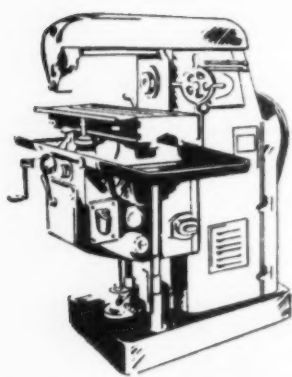
WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN
RECONSTRUCTION FINANCE CORPORATION AGENCIES

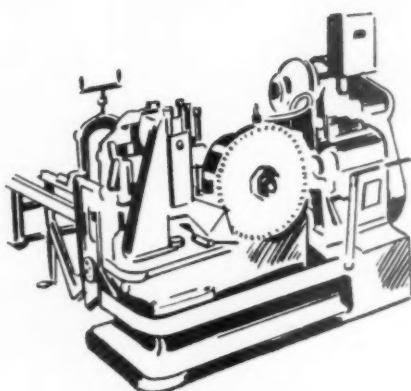
Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville
Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane
Cincinnati • Fort Worth (Telephone 3-5381)

GOVERNMENT OWNED SURPLUS

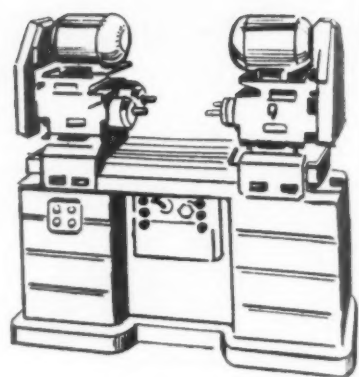
MACHINE TOOLS



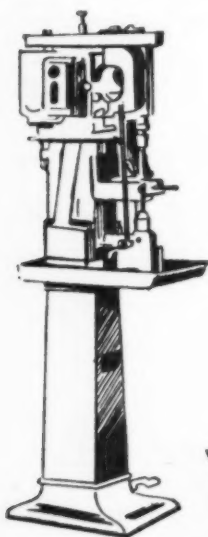
AUTOMATIC BED TYPE MILLING MACHINES
Models 1-12 and 1-18, located in New York, Detroit, Cleveland, Chicago, and Boston Regional Offices.



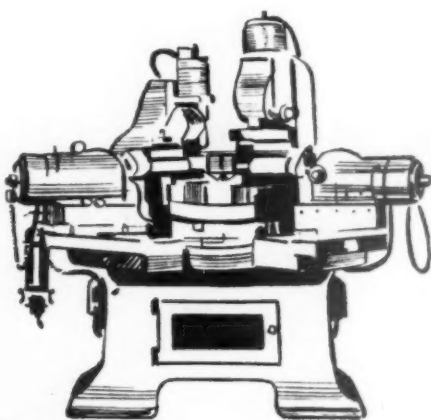
COLD SAWING MACHINES, CIRCULAR
1½" to 21" capacity, in standard models of well known makes, located in Detroit, Chicago, Cleveland, Philadelphia, Boston Regional Offices.



PRECISION BORING MACHINES
Both single and double end types located in Detroit, Chicago, Boston, Cleveland, Minneapolis, Kansas City and, in lesser quantities, other Regional Offices.



VERTICAL & HORIZONTAL DRILLING MACHINES
Special Kingsbury type machines located in Boston, Chicago, Detroit, Philadelphia, Richmond, St. Louis and, in limited quantities, other Regional Offices.



LATHE, MULTIPLE SPINDLE, AUTOMATIC VERTICAL CHUCKING
Largest inventories located in Boston, Chicago, Cleveland, Detroit, New York and Philadelphia.

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN
RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville
Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane
Cincinnati • Fort Worth (Telephone 3-5381)

PRODUCTION EQUIPMENT

NOW!

MODERN MACHINES...MANY MODELS...STANDARD MAKES

These machine tools *must* go to work. You need the profits. America needs the production. Taxpayers need maximum recovery to the government of their original cost. On hand, at every War Assets Administration office in the U. S. there are hundreds of these machines. Nearly every category of modern production equipment can be obtained at low cost. You have a unique opportunity to initiate new enterprises or modernize old . . . and at the same time do your country an important service. Check this partial list over carefully for equipment you can use. Then write, wire, or phone your nearest War Assets Administration office for detailed information, or if you prefer mail the coupon.

CHECK LIST OF SPECIAL MACHINE TOOL BUYS!

Here are a few of the many thousands of machine tools available through War Assets Administration.

MACHINE (Function)	TYPE	SIZE OR CAPACITY	Quantity Available Now
Boring, Drilling & Milling	Horizontal	Under 3" to 6"	209
Boring & Turning Drills	Vertical	Under 36" to 120" Swing	683
Boring Fixed Rail Tank Mill	Vertical		87
Precision Boring Machines	Horizontal bridge—single end	Under 8" to 14"	486
	Horizontal bridge—double end	Under 8" to 14"	226
Drills	Box column—single spindle	Under 1/2" Cap. Up to 22" Swing 1/2" to 1" Cap. 16" to 24" Swing	287
	Round column—single spindle	Under 1/2" Cap. Up to 22" Swing 1/2" to 1" Cap. 16" to 24" Swing	738
			1163
	Sensitive Floor & Pedestal Box column	Under 1/2" Cap. 12" to 22" Swing 1/2" to 1" Cap. 16" to Over 24" Swing 1" Cap. and over 24" Swing and over	933
			1875
			434
	Sensitive Floor & Pedestal Round column	Under 1/2" Cap. 12" to 22" Swing 1/2" to 1" Cap. Under 16" to 24" Swing	384
			1131

**EXPEDITING
FREE! COUPON**

Use this coupon to conserve your time. Print in a brief description of the make, type, model, and size of machine in which you are interested. We will determine in advance our stock situation on the machines and inform you quickly. No obligation, of course.

To War Assets Administration: Do you have in surplus stocks the following machine tools? Where are they located? What is their condition?

Type.....Make.....Model.....Size.....

.....
.....

MACHINE (Function)	TYPE	SIZE OR CAPACITY	Quantity Available Now
Drills	Sensitive Floor & Pedestal Upright Type —Box column	Up to 28" Swing	549
	Sensitive Floor & Pedestal Upright Type —Round column	Up to 28" Swing	161
	Heavy Manufacturing Type	Up to 32" Swing	296
	Spec. Kingsbury Way & Vertical		250
Gear Hobber	Horizontal	4" to 16" Cap. Under 16" Diameter	321
	Vertical—Universal		89
Gear Shapers	External & Internal Spur—External only	Up to 40" Diam.	280
	Spur & Helical—External & Internal Spur & Helical—External only	Up to 25" Diam.	275
			159
Gear Cutters	Bevel Type not incl. Plain Type Str. Bevel	Up to 36" Diam.	377
Gear Tooth Finisher	Generating Type Grinding		140
	Formed Wheel Type		190
Gear Tooth Lapper	External only		80
	Comb. External & Internal		57
Gear Tooth Shaver	Rotary Type		133
Grinder	External Cylinder—Plain	Up to 20" Swing	1730
	External Cylinder—Universal	Up to 16" Swing	347
	Centerless—Internal and External	All sizes	607
	Cam		223
	Crank Pin		83
	Valve		245
	Internal Cylinder—Mechanical Feed	All sizes	320
	Internal Cylinder—Hydraulic Feed	Up to 42" Swing	1094
	Internal Cylinder—Auto. Six. Comb. Hole & Face	Under 12" Swing	151
	Internal Cylinder—Auto. Six. Planetary Type	16" Swing and over	127
	Internal Cylinder—Auto. Six. Centerless	Under 16" Diam.	39
	Internal Cylinder—Auto. Six. Centerless	Up to 28" Diam.	146
	Surface—Horiz. Spindle Rotary Table	Up to 28" Diam.	146
	Surface—Vertical Single Spdl. Rotary Table	All size table diam.	274
	Surface—Reciprocating Horiz. Spindle—Hand Feed	12" to 48" Table Diam.	157
	Surface—Reciprocating Horiz. Spindle—Power Feed	12" length work cap. and over	146
	Thread—External only	Under 18" to 120" length work cap.	840
	Thread—External & Internal	All sizes	635
	Tool & Cutters—Universal	8" Cap. and over	82
	Drill	All sizes	691
	Single Point Tool	All sizes	348
	Bench—Double End	All sizes	458
	Bench—Single End	Up to 8" Wheel diam.	2876
	Floor—Double End —Dry	Up to 24" Wheel diam.	1105
	Floor Comb.—Wet & Dry	10" to 16" Wheel diam.	831
	Bench Floor & Snag —Swing Frame		216
	Comb. Grinder & Buffer		155
			1805

Name.....Tel. No.....

Title.....

Firm.....

Address.....

City.....State.....

**GOVERNMENT-OWNED
SURPLUS PRODUCTION
EQUIPMENT**

SPEED LATHES



**1/6 TO 5 H.P.
STANDARD MAKES
AT LOW COST**

Speed Lathes like this are just one of dozens of kinds of modern machine tools now available from government surpluses. For instance look at the equipment shown on the three preceding pages. Of *immediate* machine tool needs, there is scarcely one which cannot be met quickly, and at low cost, from War Assets Administration stocks—and additional equipment is being declared surplus regularly. One of industries' and government's major post war tasks is to put this equipment to productive use quickly. More specifically—where can you use one or more of these speed lathes profitably? Find out today and contact any War Assets Administration Office.

WHERE SPEED LATHES ARE

W.A.A. Regional Office	1/2 HP—	1/2 to 1 HP	1 to 3 HP	3 HP+
Detroit	204	231	147	22
Chicago	97	86	87	65
Boston	33	89	.....	.....
Cleveland	57	32	19	.....
New York	6	.....	3	.....
Denver	11	60	.....	.....
St. Louis	155	.....	26	.....
Minneapolis	67	14	6	.....
Spokane	3	11	.....	.....

CHECK AND MAIL TODAY

To War Assets Administration:

Without obligation, please send me the following information on lathes:

MAKE MODEL SIZE

Speed Lathes ☐

Multi-cut Lathes ☐

Other types ☐

Name.....

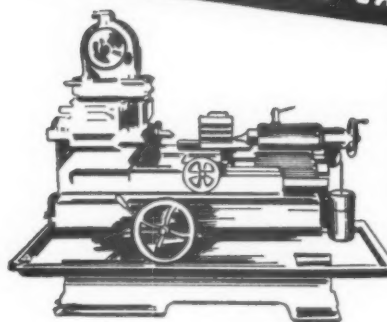
Firm.....

Address.....

City..... State.....

277-3

SMALL PIECE MULTI-CUT PRODUCTION LATHES



These Reid lathes may be stripped and retooled for any special kind of small production work. Machines located principally in Birmingham, Boston, Chicago, Cleveland, Detroit, New York, Philadelphia, Richmond and St. Louis Regional Offices.

WAR ASSETS ADMINISTRATION

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Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane
Cincinnati • Fort Worth (Telephone 3-5381)

Grind...Scrape...Crunch

They're all
in the routine diet of
**U-S-S Abrasion-Resisting
Steel**



DOES your product need "hair on its chest"? Will it have to withstand a daily beating of grit, abrasion and battering wear? Then the chances are that U-S-S Abrasion-Resisting Steel is the material you're looking for to give such rugged, enduring performance.

Mine and quarry operators swear by it. Take a look at this A-R Steel chute. Imagine the effect of a continuous gritty stream, day in and day out. Yet the chute stands up almost as though it were handling water instead of abrasive material. U-S-S A-R Steel has proved a wise choice, too, for the most abused parts of road machinery, ore han-

dling equipment, dredges, and ditchers.

Now that competitive markets are getting back to normal and efficient production is so necessary, you will be more than ever grateful for steel's versatility. It's still true that "Only Steel can do so many jobs so well". And U-S-S Steels are produced in a complete range of special types to give you whatever specific qualities you require for your application... lightness, high tensile strength, corrosion resistance, good paint-holding qualities, and so on. There's a great reservoir of experience to aid you in making the most advantageous use of steel. Write us for free consultation.

9 times out of 10

Steel
will do it better!

Quick



Steel was born to be fabricated. For any type of manufacture that involves forming, stamping, drawing, riveting, machining or welding, steel is readily adapted to high-speed, economical production.

Slick

Does your product need a bright, clean, enduring finish to give its sales appeal that "extra push"? Then check the advantages of U-S-S Vitrenamel, a favorite wherever porcelain enamel on steel is used.



Trick



Like this automatic, remote device for opening a garage door, is your product one that requires numerous shafts, gears, cams and levers that must perform accurately and resist wear? U-S-S Carilloy Alloy Steels offer a wide range of characteristics for such parts.



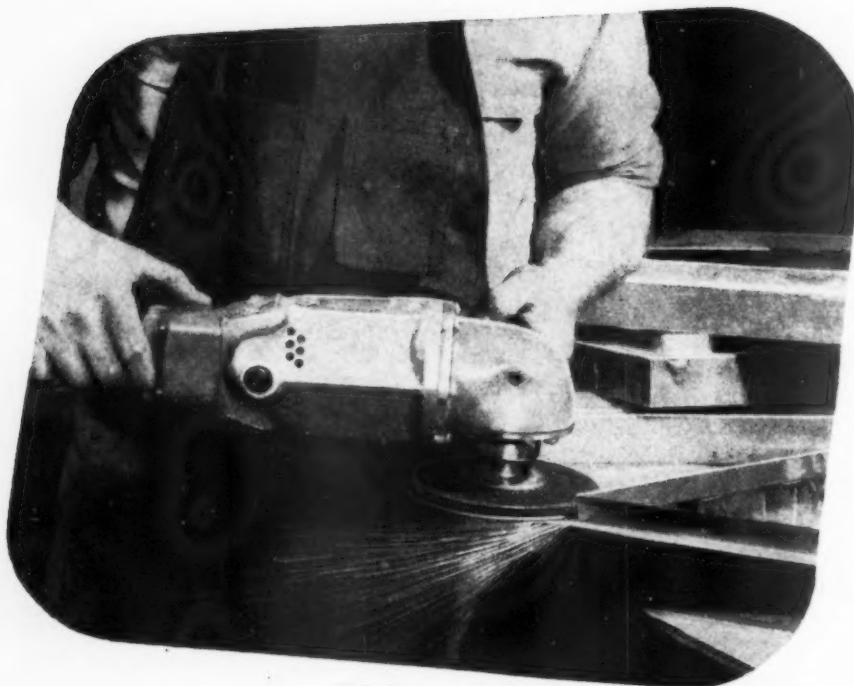
CARNEGIE-ILLINOIS STEEL CORPORATION

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United States Steel Supply Company, Chicago, *Warehouse Distributors*
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The Theatre Guild on the Air.
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time and station.

UNITED STATES STEEL



Photograph courtesy Black & Decker Mfg. Co.

HERE *you need an* ARMOURCLAD FIBRE COMBINATION DISC!

Armour Abrasives Help You Do Your Jobs Better

For better, faster finishing . . . you'll need the fastest tools and the best abrasives possible.

In any operation . . . in cutting welds . . . in removing burrs . . . in leveling metal surfaces . . . there are specialized **ARMOUR ABRASIVES** designed to do a better job at less cost. The faster, sharper, cooler-cutting *Armourclad Fibre Combination Disc* is only one of Armour's complete line of better metal-working abrasives.

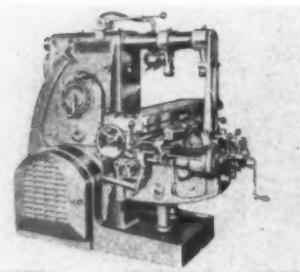
It will pay you to call on Armour's experienced technicians. They will gladly help you choose the abrasives and methods which do your jobs best.



ARMOUR
Sandpaper
WORKS

DIVISION OF ARMOUR AND COMPANY
1355 West 31st Street • Chicago 9, Illinois

CSM MILLING MACHINE



CSM line of knee-type milling machines, is announced by Kearney & Trecker Corp., Milwaukee, Wis. Horizontal and vertical models are available in 20 hp, 30 hp, and 50 hp sizes. Their development is result of research work in application of carbides to milling problems. Machines are designed to meet basic requirements—increased rigidity, greater horsepower, and more uniform flow of power to the spindle. Thirty-two quick-change feed rates from $\frac{3}{8}$ " to 90" per minute in approximate geometrical progression are provided.

THREE-CORE SOLDER



TRI-CORE is name of solder with three independently filled cores of pure resin flux, developed by Alpha Metals, Inc., 369 Hudson Ave., Brooklyn, N. Y., who states it makes for faster soldering and elimination of dry joints, in addition to substantial savings in tin. It is said to exceed ASTM Class A specifications and is available in all alloys, all flux percentages and all gauges. Test samples available.

TURNING ROLLS FOR AUTOMATIC WELDING

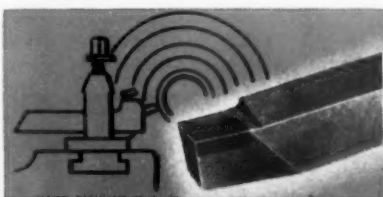


SELF-PROPELLED turning rolls mounted on tracks, with the automatic head in fixed position, has been designed by Ransome Machinery Co., Dunellen, N. J., for stepped-up automatic welding production on tanks and cylindrical objects of varied lengths and diameters. On circular welds, the weldment is set on turning rolls and rotates; for longitudinal welds, the work is driven along the track, both at the desired welding speed. This positions work under the automatic head for all welding operations. Illustration shows machine in operation at Struthers Wells Corp., Warren, Pa.

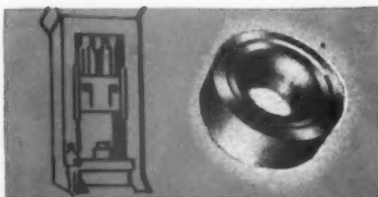


TALIDE METAL MEETS EVERY REQUIREMENT

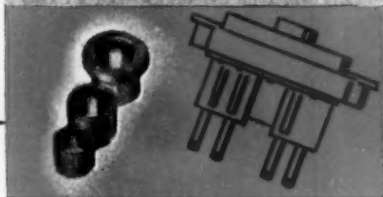
A FEW MAJOR USES FOR TALIDE METAL



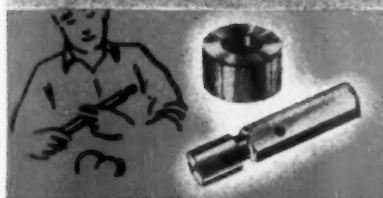
Cutting Tools



Sheet Metal Dies



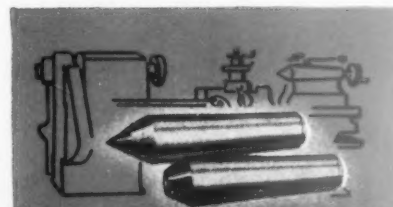
Drill Jig Bushings



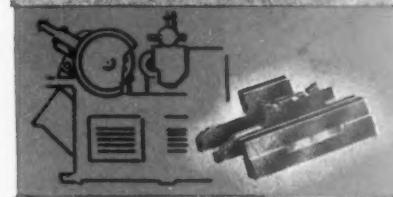
Plug and Ring Gages



Wire and Tube Drawing Dies



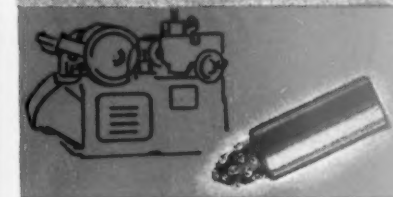
Lathe and Grinder Centers



Centerless Blades



Rolling Mill Work Rolls



Diamond Wheel Dressers

On any cutting, drawing, or wear resistance application, you can increase production many times and cut costs as much as half. Cutting tools of Talide cut 2 to 3 times faster than high speed tool steel. Talide drawing dies and wear resistance parts usually outwear steel by at least 50 to 1.

Send us parts or prints and we will show you how this hardest man-made metal can improve your production. If you prefer, a Talide sales engineer will call at your office.

Hardest man-made metal.
Highest modulus of elasticity.
(double that of steel)
Extreme Density.
Low coefficient of expansion and contraction.
High compressive strength.
High red hardness.

THE ENGINEERED CARBIDE FOR ALL APPLICATIONS



METAL CARBIDES CORPORATION

YOUNGSTOWN 5, OHIO Pioneers in Tungsten Carbide Metallurgy

SINTERED CARBIDES FOR CUTTING • HOT PRESSED CARBIDES FOR DRAWING AND WEAR RESISTANCE



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FOR HIGH SPEED
DELIVERY**

SAME-DAY delivery between many airport towns and cities as far as 1,000 miles apart. (Less than 6 hours by air.) Coast-to-coast overnight.

SPECIAL HANDLING—special pick-up and delivery (no extra cost) promotes speed of Air Express delivery.

GOES EVERYWHERE. In addition to 375 airport communities, Air Express goes by rapid air-rail schedules to and from 23,000 other points in this country. Service direct by air to and from scores of foreign countries in the world's best planes giving the world's best service.

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Representing the **AIRLINES** of the United States

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AIR MILES	2 lbs.	5 lbs.	25 lbs.	40 lbs.	Over 40 lbs.	Cents per lb.
149	\$1.00	\$1.00	\$1.00	\$1.23	3.07c	
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549	1.07	1.42	3.84	6.14	15.35c	
1049	1.17	1.98	7.68	12.28	30.70c	
2349	1.45	3.53	17.65	28.24	70.61c	
Over 2350	1.47	3.68	18.42	29.47	73.68c	
INTERNATIONAL RATES ALSO REDUCED						

LIGHT-WEIGHT PLASTIC DEVELOPED BY DU PONT

Development of a new foamed plastic, so light that a woman can balance four cubic feet on the finger tips of one hand, and yet so strong that luggage made with it as a core will easily support a man's weight, was announced today by the Du Pont Company, Wilmington, Del.

Called cellular cellulose acetate—"CCA" for short—the new plastic is envisioned for use as the strong, light-weight cores in airplane floor panels, tail assemblies and wing structures, and in refrigerators, luggage and sections of prefabricated houses.

Lighter than Cork

Lighter than cork, this new plastic combines insulation against heat and cold with its remarkable structural strength when bonded between two sheets of metal, wood, or plastic.

The plastic has excellent compressive strength. When bonded between two panels of metal, wood, or another plastic, it will not be compressed or squeezed except under extreme pressure. Furthermore, the thin sheets of metal, wood, or



Woman balancing four cubic feet of plastic on the fingertips of each hand.

plastic, which would themselves ordinarily bend under load are effectively supported by this strong core of plastic.

Effective Insulator

The thermal insulating properties of cellular cellulose acetate are virtually the same as those of cork, balsa wood, and other rigid insulating materials. However, the plastic is lighter than balsa or cork, and an equal weight of the plastic interposes a barrier to thermal changes that is much more effective.

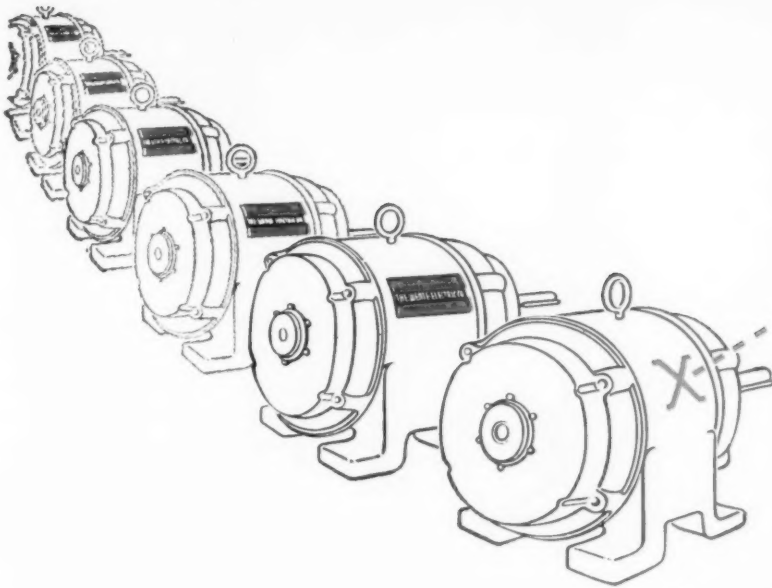
In this connection, the heat resistance of cellular cellulose acetate is such that thermosetting resins can be used to cement it. This is important to its use in laminations for panels.

The material is uniform in density. It is not brittle, nor will it crack or break down under vibration.

Bonds with Ease

The plastic is now made in strips 3.5 inches wide, $\frac{3}{8}$ inch thick, and of any desired length. Thicker and wider strips will be made soon. The strips may be readily glued together with thermosetting adhesives to form thick sections. Likewise, the plastic may be bonded with ease to metal, wood, or another plastic. Aluminum, magnesium, steel, and stainless steel are among the metals that may

(Continued on page 198)



Mark-it for Market

with permanent

PALM BROTHERS DECALS



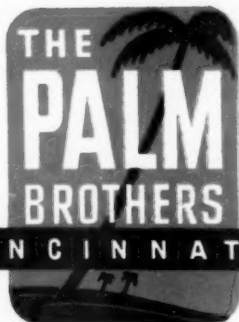
GRAY EQUIPMENT CO.
PORTLAND, OREGON

Insure positive identification of your products with Palm Brothers Decals. Easily applied to any surface . . . thoroughly legible . . . outstandingly colorful, Palm Brothers Decals make instant recognition of your merchandise inevitable. Let these permanent marks of distinction lay the groundwork for your increased sales.

We will be pleased to submit samples and sketches without any obligation. Write today for our catalog.



Offices in all principal cities for your convenience.

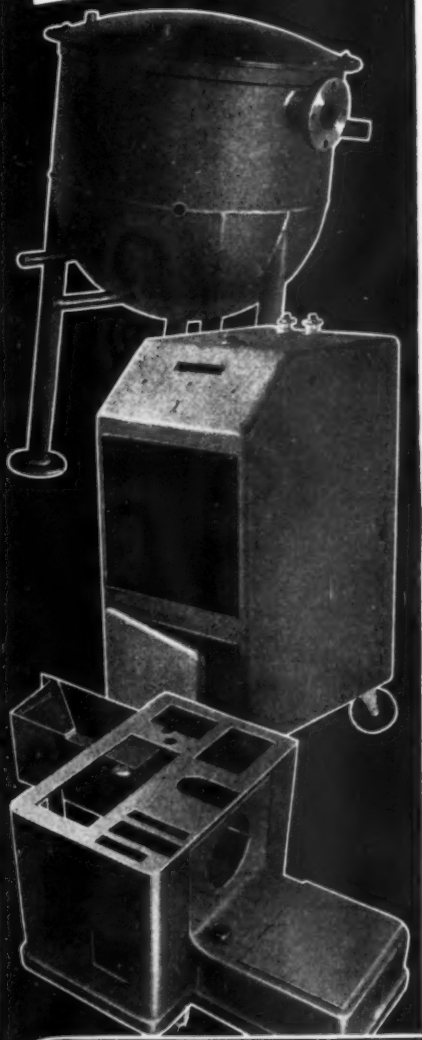


Decalomania Co.

CINCINNATI . . . 12 . . . OHIO . . . U.S.A.

PLATE AND SHEET STEEL PRODUCTS MADE TO SPECIFICATIONS

If it's quality products you want—then let Littleford experience and skill in fabricating plate and sheet steel be your assurance of securing exactly what is needed. Precision forming, bending, shearing and welding is why so many industries send specifications to Littleford's. When you need a special machine part, base, cabinet, housing, tank, etc., send blueprints to Littleford for an estimate of cost—see the saving you get through modern production methods.



LITTLEFORD

LITTLEFORD BROS., INC.
446 E. Pearl St., Cincinnati 2, Ohio

(Continued from page 196)

be bonded to cellular cellulose acetate.

The plastic may be tooled or shaped with any woodworking machinery. It will be made in four ranges of density—four to five pounds per cubic foot, six to seven pounds, seven to eight pounds, and eight to nine pounds.

NON YELLOWING ENAMEL, TEXTILE TREATMENT, AND MOISTURE-PROOF COATING FOR PACKAGING

Non-chipping, non-yellowing plastic enamel for refrigerators and kitchen appliances; a textile treatment to give fabrics a permanent "starch"; and a moisture-proof coating for packaging and for shipping machine parts were announced by the Naugatuck Chemical Division of United States Rubber Company, Naugatuck, Conn.

The Enamel

The new enamel is said to be well suited for such severe service applications as hair dryers, which operate at high temperatures; kitchen equipment where a high gloss, non-yellowing white is required; and hospital equipment which must be chip proof and chemically resistant.

Fabric Treatment

Completely invisible on the fabric and unaffected by laundering and dry cleaning, the new textile treatment is said to give nurses' uniforms, women's summer dresses, sheets and shirts a permanent "starchiness" under all weather conditions. Bed spreads are said to retain their neat appearance longer when made from fabrics treated by this new process. Draperies have improved fold and hang. Curtains appear fresher and dresses retain their newness. The treatment, called Kandarizing, is non-toxic, non-irritating and will not tenderize the finest white broadcloth or most colorful chintz.

Plastic Coating

The new plastic coating, tough, moisture-proof and resistant to salt water, was developed originally for the Army Air Forces to protect planes on the decks of freighters and tankers during shipment overseas. It finds peacetime application in the shipment of machine parts, for sealing bottles and as a stop-off lacquer for the electroplating industry.

The new synthetic resin enamel is resistant to high temperature and is applied by conventional methods and baked to an extremely durable finish. It is flexible, has high impact strength, superior hardness, high gloss and a minimum discoloration upon exposure to light or heat.

Also making use of a new synthetic resin, the textile treatment adds only 1½ to 2 per cent to the original weight of the fabric. Applied at the time of manufacture in the form of a water emulsion, the treatment lends itself readily to present textile processing equipment. It requires no cure and is unaffected by bleaching agents.

Advantages of the new plastic coating, called Kotol, are low moisture-vapor

transmission, good elongation and toughness as illustrated by its tensile strength of 900 pounds per square inch. The coating has a wide temperature range with flexibility at -40° F. and good aging characteristics at 180° F. The coating is applied by spraying or dipping and is then dried, either by air or baking at 250° F. The material has high resistance to acid and alkaline plating solutions at high temperatures.

1 1 1

GAGE MEASURES METAL SHEET STOCK THICKNESS

Development of a new type instrument gage which opens an entirely new aspect to the measurement of thickness of metal sheet stock has been announced by The Glenn L. Martin Company, Maryland. The device also may be used for inspection of the bonds between the laminar layers of laminated materials. The dial of the gage is of conventional design which measures thousandths on an inch.

Due to the instrument's ability to detect deflection in sheet materials, it also can be calibrated to inspect the thickness



Dial measures thousandths of an inch

of a single sheet material, particularly with large sheets where measuring central areas would be impossible with micrometers.

In measuring thickness of sheet metal, the pressures recorded during the test are checked against pre-determined gage readings for each thickness of the metal.

Use of the device is not restricted to metals and is equally efficient when testing wood, plastics, glass cloth, woven materials impregnated with plastics or any other which has sufficient structural strength to be used in laminated fabrics.

1 1 1

FIBERGLAS KNITTED CLOTH FOR PLASTICS REINFORCEMENT

An experimental, knitted Fiberglas cloth, for use with low-pressure resins in the production of high-strength plastic laminates, is announced by Owens-Corning Fiberglas Corporation. The knitted cloth is designed for use in conjunction with other Fiberglas materials employed for plastics reinforcement.

In laminates having complex curvatures, an unbroken surface with an attractive texture can be obtained by using (Continued on page 200)



Valves for Refrigerant Gases

Question: Why is a diaphragm valve best suited for the control of Freon and other refrigerant gases?

Answer: The diaphragm seals against leakage of gas under pressure or in-leakage of air under high vacuum. Diaphragm must be impervious to destructive action of the gas.

The above cross-sectional view of a Grinnell-Saunders Diaphragm Valve shows how the molded diaphragm of special rubber compound, unaffected by refrigerant gases, prevents the loss of gas under pressure or the in-leakage of air under high vacuum conditions.

WHENEVER PIPING IS INVOLVED

No single type of piping material is suitable for the wide variety of operating conditions encountered in modern process industries. The Grinnell-Saunders Diaphragm Valve typifies the extent to which this company goes to solve the piping requirements of hard-to-handle liquids and gases.

The development of such piping special-

ties calls for wide piping experience, continuous laboratory research and skilled field engineering – the kind of a background that Grinnell brings to the job from 95 years of piping experience. As specialists in piping, Grinnell can supply everything from a tiny tube fitting to a complete power or process piping installation.

GRINNELL COMPANY, INC. Executive Offices, Providence 1, R. I. Branch warehouses in principal cities. Manufacturing Plants: Providence, R. I.; Cranston, R. I.; Atlanta, Ga.; Warren, Ohio; Columbia, Pa.



WHENEVER PIPING IS INVOLVED

These Small Chicago Wheels
MAKE INDUSTRY HUM!



CHICAGO  **GRINDING WHEELS AND MOUNTED WHEELS**

Millions of whirling abrasive wheels, trained in war's tough school of precision finishing, each doing a prime job in laboratory, tool room, aboard ship, on production line. And — they're all set and eager to tackle civilian goods now that peace machinery is singing again.

Whether it's removing burrs, smoothing edges, squaring surfaces so accurately that the finish can be measured in micro inches, or cut-off work — there's a Chicago ready to do a top-ranking job for you.

VITRIFIED GRINDING WHEELS with a 50-year pedigree. Up to 3" in diameter in various abrasives and bonds including the famous FV Bond.

MOUNTED WHEELS. The largest assortment made with a shape and abrasive to take care of every internal and external finishing job.

CUT-OFF WHEELS. All types and sizes. Now offered with the sensational new special-formula RT Bond (rubber or resinoid).

SEND FOR TEST WHEEL. Learn first-hand about Chicago's superiority. Tell us what you have to finish, size wheel you'd like and we'll mail one promptly.

Send coupon for 64-page illustrated catalog.

CHICAGO WHEEL & MFG. CO.

1101 W. Monroe St., Dept. PG-5, Chicago 7, Ill.

★ Half a century of specialization has established our reputation as the Small Wheel People of the Industry.



Send Catalog. Interested in ☐ Grinding Wheels ☐ Mounted Wheels ☐ Cut-off Wheels ☐ Send Test Wheel. Size

Name

Address

PG-5

(Continued from page 198)

the stretchable knitted cloth as a surfacing material to cover standard Fiberglas cloth reinforcements that must be tailored, or out, to conform to given curvatures.

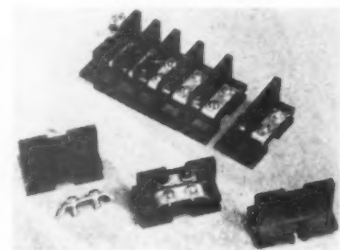
The knitted cloth can also be used in combination with Fiberglas mat reinforcement as a means of making the mat conform to extreme curvatures. The mat is placed between two piles of the knitted cloth and the cloth is then stretched, by pulling on the edges, to conform to the curvature.

Since the new Fiberglas cloth is knitted on a tubular machine, it has to be slit to make it one-ply. Specifications are: width, 34 inches, flat tubular; weight per square yard, 9.7 ounces; weight per linear yard, 18.3 ounces; bursting strength, pounds per square inch (approximate), 169; thickness, standard textile gauge, 0.021 inch; stretch, 31 per cent.

1 1 1

SEGMENTED TERMINAL BLOCK

An ingenious new terminal block called the Add-A-Point has been placed on the market by the Wama Co., Baltimore 2, Md. The block consists of separate segments molded by them from a Durez phenolic plastic having excellent



Any number of segments may be added.

dielectric properties. The segments are so designed that they fit together snugly and easily without the aid of tools. Any number from one up may be added at will. The whole interlocking assembly is held together with a simple metal strip and two screws. The blocks are rated pu to 60 amperes and may be operated at 750 volts.

1 1 1

MEASURE ULTRAMICROSCOPIC PARTICLES BY COLORED LIGHTS

The size of particles as small as two one-millionths of an inch in diameter — too minute to be seen with an optical microscope — can now be measured rapidly, and with a high degree of accuracy, by means of a new method worked out in the laboratories of the Chemical Department at the Experimental Station of E. I. du Pont de Nemours & Company, Wilmington, Delaware.

The procedure consists in passing light of different colors through a suspension
 (Continued on page 204)

A THRILL PACKED ROLLER COASTER IS SAFER NOW

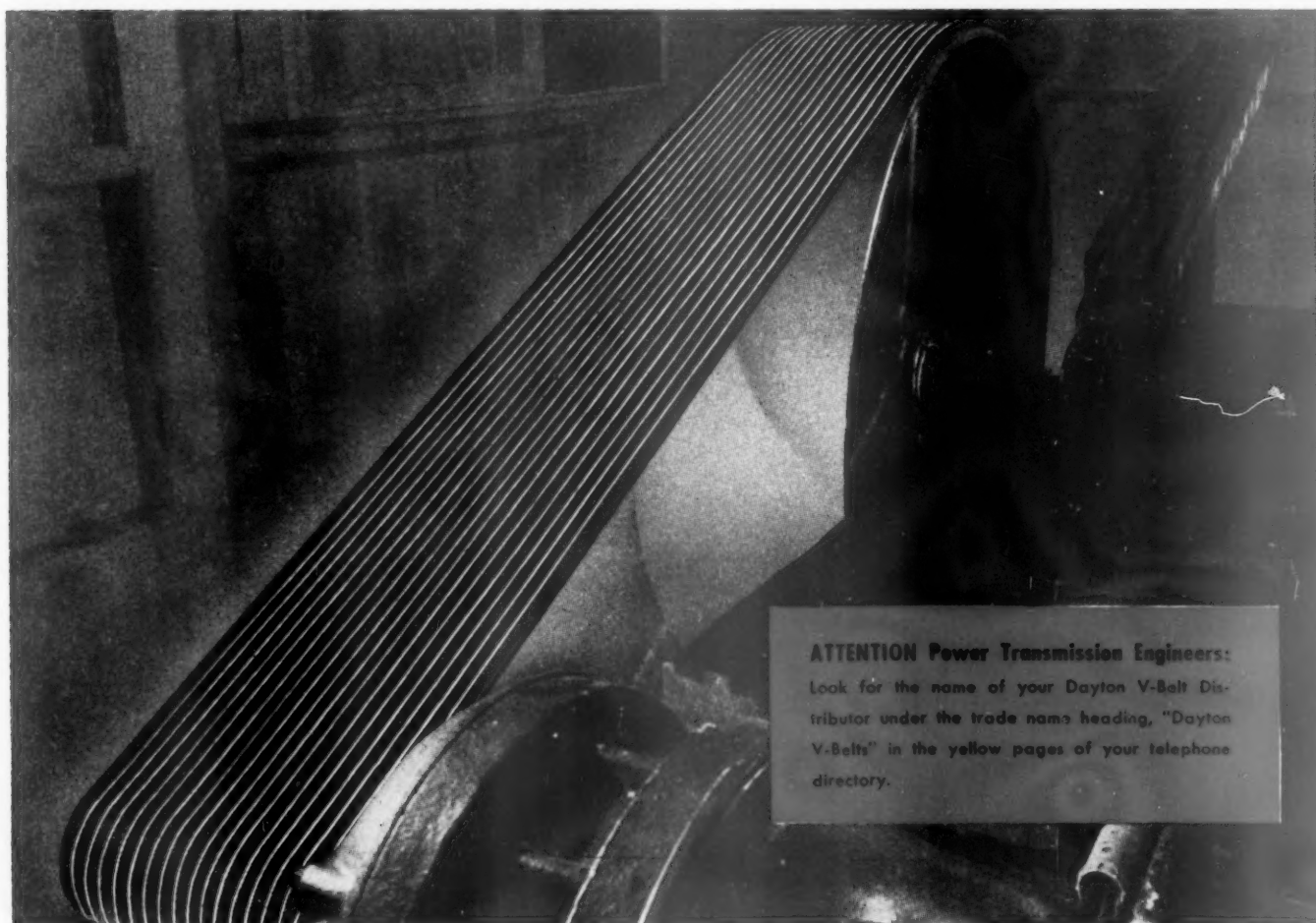
because

THE MACHINERY THAT STARTS THE CARS ON
THEIR DIZZY TRIPS IS NOW EQUIPPED WITH
DAYTON V-BELT DRIVES
that ELIMINATE VIBRATION

The original drive on this roller coaster's machinery caused so much vibration that parts loosened rapidly, wore out quickly, creating a safety hazard as well as keeping maintenance costs high. Since Dayton V-Belts were installed, vibration has been eliminated, the safety hazard has disappeared and maintenance costs have been cut in half. In thousands of industrial plants Dayton V-Belt Drives are eliminating vibration and reducing maintenance costs and, in addition, are eliminating slippage and noise, saving space, providing

positive power control and operating under the toughest conditions. They can do these things because they are *engineered* for their jobs . . . the result of a research experience of 40 years working with natural and synthetic rubbers, making *specialized* rubber products for specific industrial jobs. This is why Dayton V-Belts can solve your power transmission problems. Write for full information.

THE DAYTON RUBBER MANUFACTURING COMPANY
Dayton 1, Ohio



ATTENTION Power Transmission Engineers:
Look for the name of your Dayton V-Belt Distributor under the trade name heading, "Dayton V-Belts" in the yellow pages of your telephone directory.

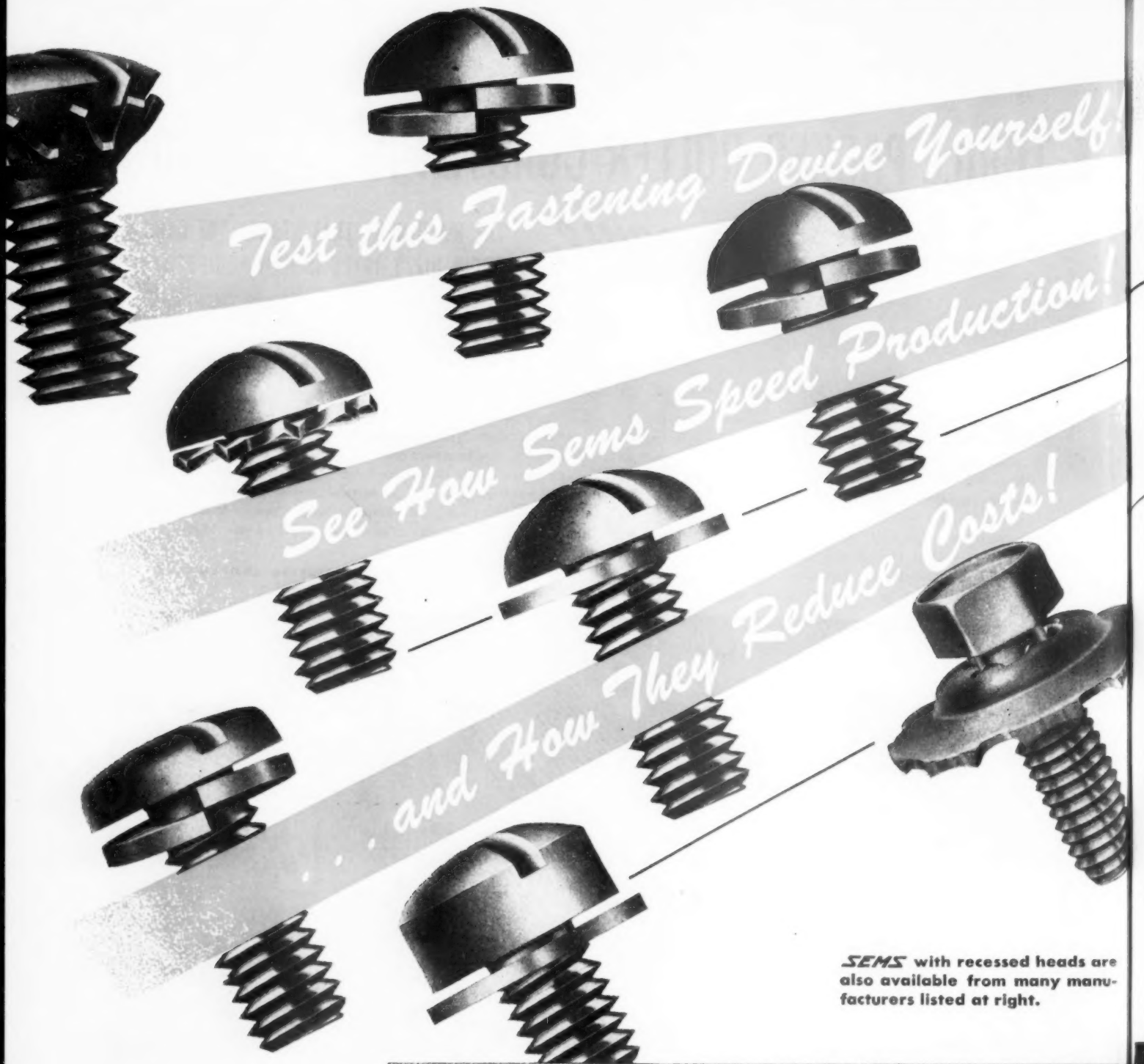
SEND FOR THE LATEST DAYTON V-BELT CATALOG

This 384-page book gives complete engineering data and tables for figuring any power transmission drive quickly and easily. Your copy is FREE. Write today, The Dayton Rubber Manufacturing Company, Dayton 1, Ohio.



Dayton Rubber

THE WORLD'S LARGEST MANUFACTURER OF V-BELTS



Test this Fastening Device Yourself!

See How SEMS Speed Production!

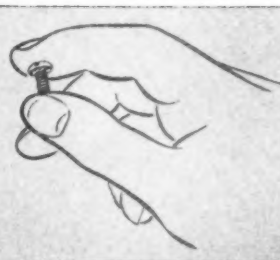
... and How They Reduce Costs!

SEMS with recessed heads are also available from many manufacturers listed at right.

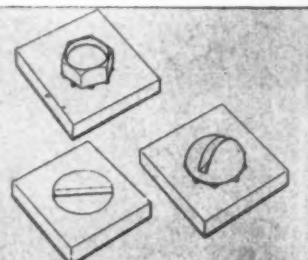
*A Few of
the Production
Advantages
of SEMS*



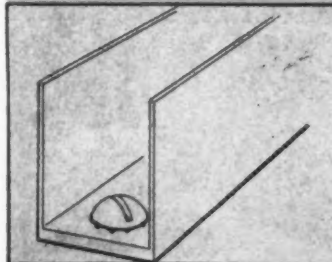
PERFECT FOR HARD TO REACH PARTS



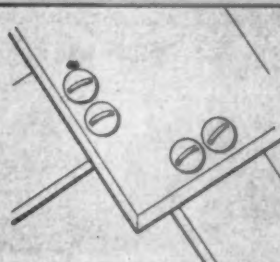
OR WHEN SCREWS ARE TINY AND HARD TO HANDLE



NEAT APPEARANCE ABSOLUTELY CERTAIN WITH ANY TYPE OR SIZE



EASY TO INSTALL IN NARROW CHANNELS



OR WHERE SCREWS MUST BE CLOSE TOGETHER



CAN BE USED WITH HOPPER FED AUTOMATIC DRIVERS

Get
SEMS

Here
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speed
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can a
book
it to

S

A

Cha

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The Am

Reli

Everyone is a

SEMS

SEMS ARE PRE-ASSEMBLED WASHER AND SCREW UNITS IN WHICH THE WASHER IS HELD ON THE SCREW BY THE ROLLED THREAD AND IS FREE TO ROTATE.

SEMS eliminate the labor and cost of hand assembling washers and screws. Only one unit to handle . . . delivered to you *Pre-assembled* . . . ready for installation. SEMS assure fast, easy driving . . . better fastenings and improved product performance.

Write for Free Sample!

Test SEMS yourself! You will immediately see the many advantages for faster, more efficient assembly. Write to any one of the fastening manufacturers listed below.

Just say you want a SEMS SAMPLE!



*Get This New
Sems Data Book!*

Here they are . . . all the advantages of SEMS! Book shows how they speed assembly . . . improve product performance and reduce costs. Includes cost charts so that you can actually figure savings beforehand! Write for free SEMS book . . . any one of the manufacturers listed below will send it to you.

SEMS are available from the following fastening manufacturers:

American Screw Co.
Providence, R. I.

Central Screw Co.
Chicago, Ill.

Chandler Products Corp.
Cleveland, O.

Continental Screw Co.
New Bedford, Mass.

Corbin Screw Division
The American Hardware Corporation
New Britain, Conn.

Eaton Mfg. Co.
Reliance Spring Washer Div.
Massillon, O.

The Lamson & Sessions Co.
Cleveland, O.

Manufacturers Screw Products
Chicago, Ill.

National Lock Co.
Rockford, Ill.

The National Screw & Mfg. Co.
Cleveland, O.

New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Ill.

Progressive Manufacturing Co.
Torrington, Conn.

Russell, Burdsall & Ward
Bolt & Nut Co.
Port Chester, N. Y.

Scovill Manufacturing Company
Waterville, Division
Waterville, Conn.

Shakeproof Inc.
Division of Illinois Tool Works
Chicago, Ill.

Steel Co. of Canada, Ltd.
Hamilton, Ont., Canada

OVERHEAD CRANES

200 Ton Alliance 100' Span	20 Ton Shaw 76' 4" Span	10 Ton Shaw 68' Span
175 Ton Morgan 54' Span	15 Ton Alliance 50' Span	10 Ton Shaw 58' Span
150 Ton Whiting 30' Span	15 Ton Alliance 35' Span	10 Ton Shaw 88' Span
80 Ton "American" 40' 6"	15 Ton Cleveland 55' 6" Span	10 Ton Northern 71' 10 1/2"
75 Ton Alliance 37' Span	15 Ton Cleveland 35' Span	7 1/2 Ton Erie 70' Span
75 Ton Alliance 78' Span	15 Ton Morgan 77' Span	7 1/2 Ton P&H 30' 6" Span
50 Ton Cleveland 71' 10 1/2"	15 Ton Niles 32' Span	7 1/2 Ton Scullin 71' 10 1/2" Span
50 Ton Shaw 69' 10" Span	15 Ton Northern 53' Span	7 1/2 Ton Shepard 36' Span
40 Ton Alliance 82' Span	15 Ton Shaw 82' Span	6 Ton Shaw 23' Span
35 Ton Northern 22' Span	15 Ton Shaw 77' Span	5 Ton "American" 10' Span
30 Ton Case 41' Span	15 Ton Toledo 82' Span	5 Ton Champion 37' 6" Span
30 Ton Morgan 30' Span	15 Ton Whiting 74' 8 1/2" Span	5 Ton Euclid
30 Ton Morgan 77' Span	15 Ton Whiting 71' 10 1/2"	5 Ton Milwaukee 39' 8" Span
30 Ton Niles 53' 9" Span	12 Ton Morgan 56' Span	5 Ton Milwaukee 66' 9" Span
30 Ton P&H 80' Span	10 Ton Alliance 58' 9" Span	5 Ton Milwaukee 70' Span
30 Ton Reading 56' Span	10 Ton Alliance 71' 10" Span	5 Ton Northern 49' 6" Span
25 Ton Bedford 50' Span	10 Ton "American" 27' Span	5 Ton P&H 45' Span
25 Ton Cleveland 106' Span	10 Ton Cleveland 38' Span	5 Ton Shaw-Box 25' Span
25 Ton P&H 70' Span	10 Ton Cleveland 50' Span	5 Ton Shepard 40' Span
25 Ton Whiting 106' Span	10 Ton Emsco 30' Span	5 Ton Toledo 96' Span
25 Ton Whiting 82' Span	10 Ton Lane 50' Span	5 Ton Whiting 80' Span
25 Ton Whiting 56' Span	10 Ton Morgan 39' 5" Span	3 Ton P&H 46' 4" Span
20 Ton Alliance 77' Span	10 Ton Morgan 77' Span	3 Ton Shaw 33' Span
20 Ton Cleveland 65' Span	10 Ton P&H 57' Span	3 Ton Whiting 57' 3" Span
20 Ton Morgan 77' Span	10 Ton P&H 78' Span	2 Ton Detroit 28' Span
20 Ton Northern 60' Span	10 Ton P&H 87' 6" Span	2 Ton P&H 46' 4" Span
20 Ton P&H 39' 6" Span	10 Ton Northern 34' Span	2 Ton Shepard-Niles 18' & 14"
20 Ton P&H 51' 4" Span	10 Ton P&H 48' 10 1/2" Span	1 1/2 Ton Cleveland 25' Span
20 Ton Shaw 76' 4" Span	10 Ton P&H 60' Span	1 1/2 Ton P&H 34' Span
20 Ton Shepard Niles 49' 6" Span	10 Ton P&H 80' Span	1 Ton Curtis 24' Span

Take advantage of the ECONOMY service by telephoning to us collect, which will enable us to discuss your requirements and present our suggestions.

In addition to overhead cranes we can supply all types of shovels, cranes, draglines, tractors, for practically everything in the construction equipment field. May we have your inquiries?

ECONOMY CO., Inc.

49 Vanderbilt Avenue, New York 17, N. Y.

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to solve your production cleaning problems

How Plant Sanitation Helps Increase Production

Increased production is an inevitable result of ideal working conditions. Clean and sanitary toilets, wash basins, shower stalls, etc., go far toward promoting employee goodwill . . . encourage greater, more accurate production. War-work has taught us that!

Oakite TRI-SAN can play an important part in making this possible for you. A triple sanitizing agent, TRI-SAN disinfects, deodorizes and cleans in one operation. This, three-purpose, water-mixed material costs only 1¢ a gallon!

Send for FREE 20-page booklet giving many useful housekeeping hints.

OAKITE PRODUCTS, INC., 54 Thames St., NEW YORK 6, N. Y.

Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE Specialized **CLEANING**
MATERIALS • METHODS • SERVICE • FOR EVERY CLEANING REQUIREMENT

(Continued from page 200)

measuring the amount of light of each of the powder in a liquid, and then color which emerges. Suspensions containing particles of different sizes transmit different colors to different degrees.

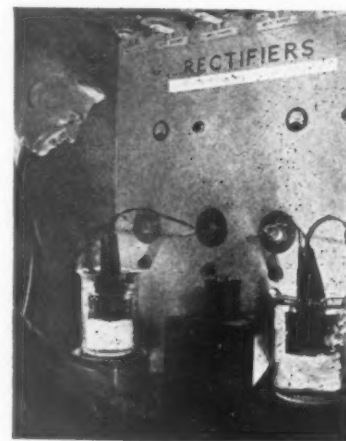
From the data thus obtained, the average size of the suspended particles is calculated, and also a curve is obtained showing the relative amounts of each particle size present.

One of the advantages of this new method over previously used techniques is that of speed, the whole operation requiring only about two hours. In addition, the technique can be carried out by trained non-technical personnel, with relatively simple equipment.

Measurement of particle size is of importance in a wide variety of technical investigations. For example, it is of primary interest in connection with research on white pigments for paints and enamels, where quality of the finished product is to a considerable degree dependent upon the size and uniformity of the pigment particles.

SEALED RECTIFIER INVULNERABLE TO EXTREME TEMPERATURES

A newly developed selenium rectifier can be submerged in boiling water or packed in ice and still turn alternating current into direct current at an efficiency equal to that attained under normal conditions.



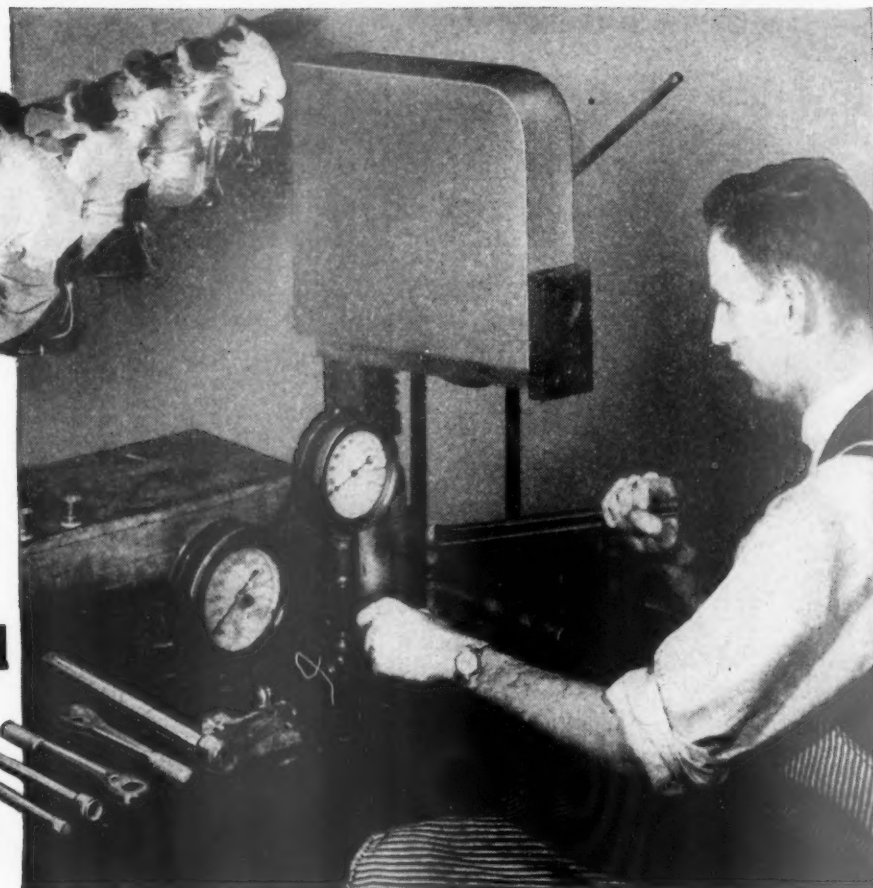
Steam is rising from the water boiling in beaker at left; the other contains floating ice. Yet the two hermetically sealed selenium rectifiers immersed in them are turning a-c into d-c at an efficiency equal to that attained under normal conditions.

ciency equal to that obtained under normal operating conditions, a performance never before achieved with a plate type rectifier.

The new rectifier, a product of seven years of secret research and development by engineers of the Westinghouse Electric Corporation, consists of a heavily tin plated, hermetically sealed container inside which is placed selenium suspended in oil. It was designed to keep pace with the exigencies of war. It has unequalled invulnerability to high and low temperatures, a quality which insures

(Continued on page 206)

Below—an inspection bench in the Broaching Department, and in the big illustration—the New Britain Torque Tester at work measuring the toughness of these Tools...actually breaking them under tremendous pressure.



Breaking Perfectly Good TOOLS Scientifically

*to give you
Mechanics Hand Tools that make money*

Every day — beautiful, glistening New Britain Tools . . . Tools as fine as any mechanic ever handled . . . are offered up on the high altar of SAFETY — guillotined for your protection! The New Britain Torque Tester shown above is a hard bitten, cold blooded judge of Tool perfection. It registers to the fractional ounce of strain the ultimate capacity of a Tool's ability to "take it". It's the final, positive proof that a New Britain Tool is RIGHT before you put it to work.

New Britain Hand Tools are not alone time and money savers where

maintenance is concerned . . . they're knuckle insurance for mechanics as well. From the time they start as a rough piece of selected alloy steel, they must pass countless tests and inspection after inspection. Every step of their manufacture is controlled, checked and rechecked.

Ask your Mill Supply Jobber to show you the *quality tested* New Britain Line. Every Tool in it has been engineered for the future — they're tomorrow's Tools TODAY! The New Britain Machine Co., New Britain, Conn.

The complete New Britain Line for Automotive, Aircraft, General Maintenance and Production Needs is sold by leading Jobbers.

New Britain

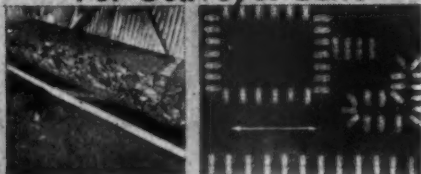
GREATER STRENGTH • BETTER FIT

HAND TOOLS

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

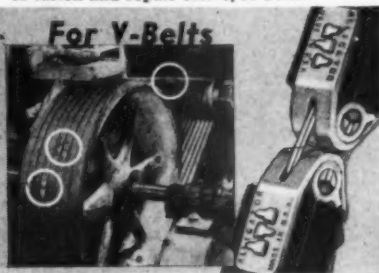
For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from $\frac{1}{4}$ " to $1\frac{1}{2}$ " thick and of any width. The view on the right shows the various types of rips and patches that can be made with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts



ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belt of cross woven fabric core construction now being made by most belt manufacturing manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin Y-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin Y-14.

For Transmission Belts



ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to $\frac{3}{8}$ " thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

(Continued from page 204)

top performance in any climate from the North Pole to the Equator.

Industrial electrical control devices; transformers, resistors, vacuum tubes, rectifiers and other heat-dissipating apparatus, are usually mounted inside a metal cabinet resulting in extremely high temperatures that mitigate against good efficiencies and long life for ordinary rectifiers. This new selenium rectifier will operate with only a slight drop in current output at a total temperature higher than the boiling point of water and will last much in excess of 1,000 hours.

By actual test salt spray does not interfere with the performance of the new selenium rectifier but it will destroy an unprotected rectifier on the deck of a ship in a few hours. In tropical areas, insects, fungi and humidity quickly ruin the ordinary open-type rectifier but the hermetically sealed selenium unit is impervious to their attack.

PLASTIC TROWELING COMPOUND

A plastic troweling compound which it is said can be "tailored" to conform with individual requirements, is announced by Duorite Plastic Industries, Culver City, Calif. It is called Plastipaste, and is said to be adaptable for making tools, heat and electrical insulators, relief maps, containers for corrosive chemicals, art objects, and so on. Essentially a phenolic resin, it is adapted to various types of use by regulating the percentages of "filler", a special fiber compound. Plastipaste is applied by troweling, and will adhere to wood and other materials. When rapid hardening is desired, it can be cured without heat in 30 minutes by changing type of catalyst used. Specific gravity is 1.05; compressive strength 12,000 p. s. i.; flexural strength 3,000 p. s. i.; Izod impact strength 3 ft. lbs., in./in.; softening point, none-chars at 400 deg. F.; excellent resistance to acid and alkaline solutions, water, oils, and solvents.

ANNOUNCE PLIOFILM AS WRAPPING FOR FRUITS, VEGETABLES, MEATS

Tree-ripened oranges and grapefruit will reach the American breakfast table in 1946 with all the freshness and flavor that they possessed at the moment of picking.

A tight wrapping of extremely thin Pliofilm that fits each piece of fruit as snugly as a glove will make possible these new thrills in taste and quality that await the palate of the nation as a result of new developments in packaging foodstuffs achieved at the Goodyear Research Laboratory in Akron, Ohio.

Equally important results have been obtained in using Pliofilm for packaging apples, other fresh fruits, fresh vegetables, bacon, fresh meats, cheese, and fresh fish, Dr. R. P. Dinsmore, vice-

president in charge of research and development of The Goodyear Tire and Rubber Company, revealed today.

Tests conducted at the Goodyear Research Laboratory show that apples stored for 18 months in the new Pliofilm wrappers possess the same firm qualities and fresh flavors that they had when pulled from the tree, Dr. Dinsmore said.

ECONOMICAL FENDER WELDING

The coordinated production of both right hand and left hand fenders at 150 units per hour has been simplified by a leading manufacturer of auto bodies through the use of a duplex Ultra-Speed welding machine, designed and built by Progressive Welder Company, 3050 East Outer Drive, Detroit 12, Michigan. The machine has two welding positions—one for left hand and one for right hand fenders. Either position can be operated individually, or both right and left hand fenders can be welded simultaneously. Thus, two operators can maintain a continuous supply of matched fenders at the rate required by the final assembly line. In this machine the dust shields are welded to the 18 gage steel fender.

The machine is so designed to permit it to be split in two sections and the



Machine has two welding positions, which can be operated individually or simultaneously.

halves moved to separate locations if desired. Each side has its own welding transformer, current distribution switch, timing circuit and contactor. One hydraulic power unit furnishes welding and clamping pressure to both sides of the duplex machine. Thus only an additional hydraulic power unit need be supplied to operate the two halves individually. This design results in a sizeable economy in equipment and floor space in addition to flexibility.

ELECTRODE FOR MACHINABLE WELDS IN CAST IRON

A new welding electrode for making machinable welds in cast iron has been introduced as a product of The International Nickel Company's new electrode plant at the company's Bayonne Works, is claimed to mark a distinct step forward in the art of welding cast iron.

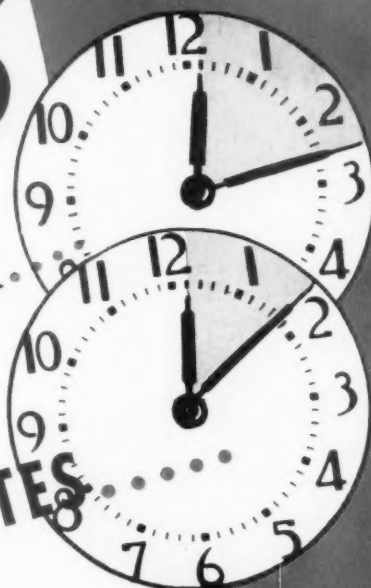
Besides this new electrode, designated by the trade name Ni-Rod, another new electrode also has been developed. This is the "133" 80-20 nickel chromium electrode for welding the Inconel side of Inconel clad steel. Besides these, 6 other electrodes are now being produced at the plant for arc welding. The 6

(Continued on page 208)

ATKINS

Silver Steel **BLADES**

SQUEEZE 13 MINUTES' WORK INTO 8 1/2 MINUTES



CUTTING REPORT
 Material, 6" dia. No. 94100 steel
 (equivalent to Tenken No. 5200)
 Cutting Time with Previous Blade; 13 min.
 Cutting Time with Atkins Blade; 8 1/2 min.
 Increase in Cutting Speed; **53%**

**53%
INCREASE**

When, by simply changing the blade on a hacksaw machine, a job can be done in two-thirds the time, it's something to look into . . . especially when this is only one of numerous reports showing similar performance.

Find out how the superior cutting performance of Atkins "Silver Steel" Blades can increase your metal cutting efficiency . . . how they cut faster . . . reduce tool costs . . . turn out more cuts per blade.

Check with your jobber today. Ask him to have an Atkins Cutting Engineer arrange an actual demonstration on material you choose.

TAKE THE "HACK"

OUT OF

HACK SAWING—

USE ATKINS

"SILVER STEEL"

BLADES.....

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HOME OFFICE AND FACTORY: 402 South Illinois Street, Indianapolis 9, Indiana

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MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB

Power and Hand Blades • Milling Saws • Segmental Cold Saws • Metal Cutting Bands





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Rawhide

AND THERE'S NOTHING LIKE

CHICAGO *Rawhide*

Cushioned power—that's rawhide. Hammers and mallets made from this tough, resilient material deliver the *most* power with the *most* protection. Your fine finishes, your expensive machined parts are much less likely to be damaged when you insist upon rawhide.



C/R coiled rawhide hammer faces may be quickly replaced in the permanent malleable iron heads.

Your Guarantee

Here is why the best in rawhide is Chicago Rawhide: C/R's ultra-careful hide selection...special seasoning and manufacturing processes...58 years' experience in working rawhide...top quality standards.

CHICAGO *Rawhide* **MFG.CO.**

1203 ELSTON AVE. • CHICAGO 22, ILLINOIS

(Continued from page 206)

types of electrodes are designed for Monel, Inconel, nickel, "L" Nickel, "K" Monel, 70-30 cupro-nickel, and the various clad steels. Among them is another new product, "132" AC-DC rod for Inconel.

1 1 1

STEEL SPRING VIBRATION ISOLATING UNIT

New type LK Vibro-Isolator, a simplified steel spring vibration isolating unit, is announced by The Korfund Co., Inc., 48-18 32nd Place, Long Island City, N. Y. The unit is designed in 26 sizes for rated loads of 75-12,000 lbs. Adjustable resilient checks in the four corners of the housing act as stabilizers. Properly installed, and adjusted, the type LK is said to provide efficient vibration control for all impact machinery, stationary and marine Diesel engines, generators, testing and processing equipment, air conditioning equipment, business machines and various other types of industrial equipment. Bulletin LK 550 gives complete description and engineering data.

1 1 1

WESTINGHOUSE ANNOUNCES ELECTRONIC AND RAILROAD DEVELOPMENTS

An electronic "blow torch" which may revolutionize high-frequency heating methods for industry, a 2,000 shaft horsepower gas turbine unit for locomotives and a railroad car stabilizer which will improve the rideability of coaches as much as 200 per cent were revealed at the Research Laboratories of the Westinghouse Electric Corporation to a group of newspaper and wire service correspondents touring the nation to study industrial reconversion and new products.

Gwilym A. Price, Executive Vice President of Westinghouse, discussed the Company's plans for expansion and for maintaining employment at above the pre-1941 level.

The electronic "blow torch", a dielectric heating unit which hurls ultra-short radar waves at an object to be polymerized, cured or bonded, was demonstrated by Dr. J. A. Hutcheson, associate director of the laboratories.

Beams Waves to Target

"This device," he explained, "projects electronic waves on the material to be heated, wherever it may be, whereas previous devices required that the object be placed in an electrical field created between two stationary metal plates or electrodes.

"The advantages of this unit, which it will be possible to bring to the object or joint to be heated, are obvious," he continued, "since it can be used in restricted areas and effectively on irregularly-shaped pieces of material. Formerly, when a non-symmetrical piece was placed between the electrodes, the areas nearest the electrodes were in danger of being

(Continued on page 210)



The right Tire for every job!



UNITED STATES RUBBER COMPANY

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RAILROADS

WIRE MILLS

FOR EXAMPLE:

Any preventive maintenance program set up to insure minimum-cost, trouble-free operation of your fleet depends on the effectiveness of the cleaning materials and methods you use. It will pay you to study the "how and why" of truck and bus fleet cleaning in the Magnus "Fleet Operators' Cleaning Handbook." It is full of practical ideas for improving all the cleaning operations of a truck or bus fleet.

WRITE FOR YOUR HANDBOOKS

There are similar Magnus Handbooks covering the cleaning operations of most industries, including paper, metal products, petroleum, railroads, baking, dairies, food plants and aviation. Write for as many copies of the cleaning text books covering your problems as you can use in your plant.

1921-1946

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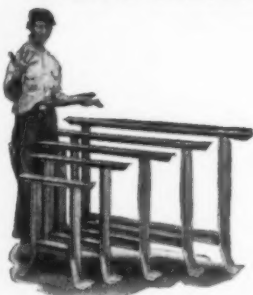
MAGNUS



MAGNUS CHEMICAL CO. 93 SOUTH AVE., GARWOOD, N. J.

Cleaners • Methods • Machines

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WORKBENCHES
OF STEEL
HAVE THEM ALL!



When you order "Hallowell" Workbenches of Steel, you can forget the bother of new designs and construction costs. For "Hallowell" offers you 5 heights and widths, 7 standard lengths, in over 1300 ready-made, interchangeable styles!

"Hallowell" Workbenches are built to stand up under years of hard wear . . . their sturdy legs hold them firmly without costly bolting to the floor.

Write today for the "Hallowell" Catalog.

"Unbrako" and "Hallowell" Products are sold entirely through distributors.



OVER 43 YEARS IN BUSINESS

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JENKINTOWN, PA. BOX 590

Branches:

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(Continued from page 208)

scorched or burned before the entire piece was uniformly heated."

He pointed out that oddly-shaped plywood forms, and T-joints formed by struts or spars could be easily cured or bonded with this new super-high-frequency unit, which is still in the research stage and not available commercially.

"It is the wartime accomplishment of bringing 'horsepower' to microwaves that has made this development possible," Dr. Hutcheson explained. "Before the war we were able to use a few watts at most in the microwave section of the spectrum; today we work with kilowatts, or thousands of watts.

"When greater power output at high frequencies is realized we may be able to project these radio waves effectively from a tube no bigger around than a flashlight."

Turning to a consideration of the whole electronics field, Dr. Hutcheson stated that Westinghouse anticipated that this \$250,000,000-a-year pre-war industry would do an \$800,000,000 business in this first postwar year and would average a billion dollars a year for the next five years.

"Before Pearl Harbor," he said, "65 per cent of the electronics business was in home radio receivers and we believe that the entertainment field — which will also include television, FM and motion picture sound equipment — will continue to account for from 60 to 65 per cent of the larger volume."

Stratovision To Serve Millions

Citing a new entertainment development in the electronics field, he declared that Stratovision, the Westinghouse-developed system of relaying television and FM broadcasting from only 14 planes cruising six miles in the air would economically bring such programs to 78 per cent of the population.

"This new technique eliminates the costly multiplicity of ground transmitters and thousands of miles of expensive coaxial cables," he declared, "and permits the effective use of a greater portion of the high frequencies, making room for more programs without interference. In consequence thousands of jobs should be created producing television and FM receivers for this greatly enlarged audience.

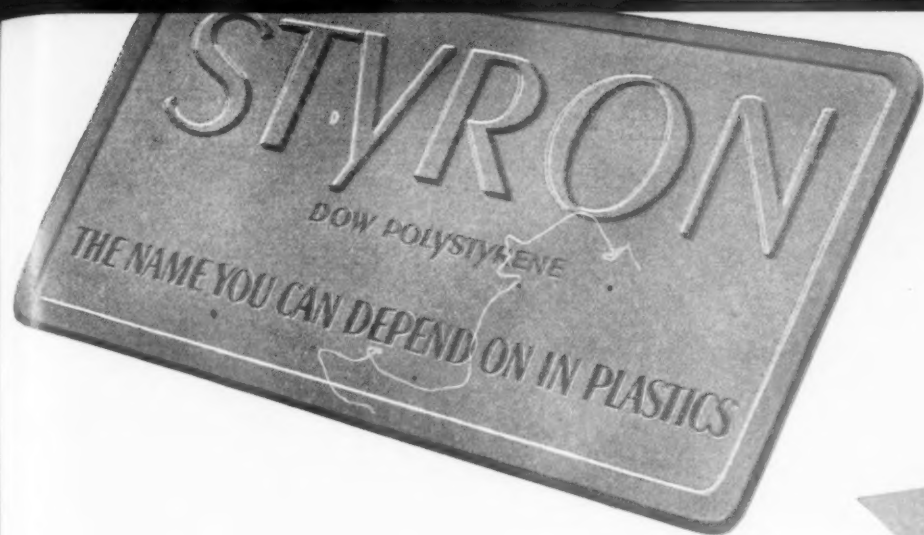
Considered as drastic a departure in its field as Stratovision is from conventional broadcasting was the new type of locomotive propulsion unit announced by an engineering executive of the Westinghouse Steam Division.

Gas Turbine Locomotive Unit

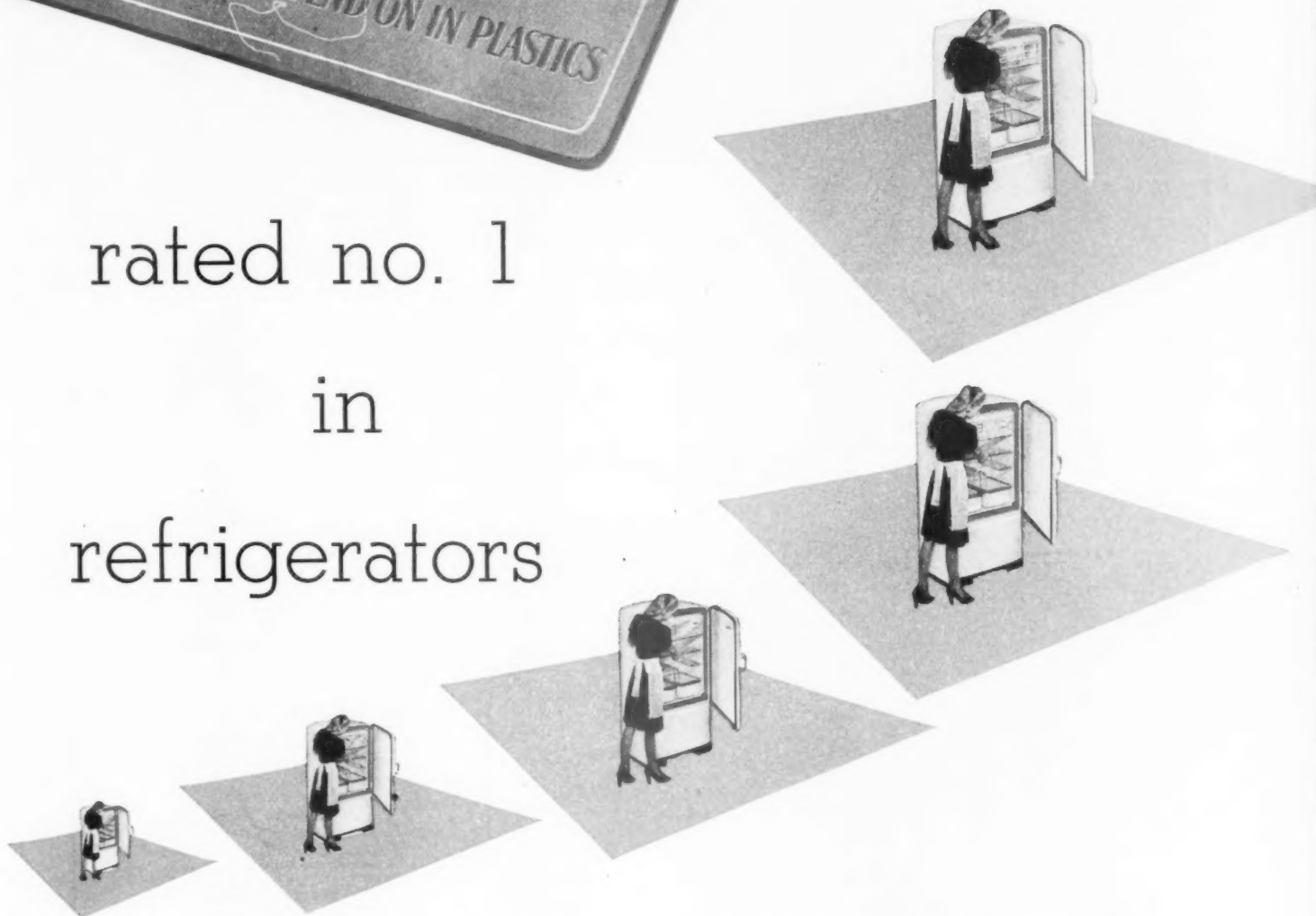
"We are building a 2,000 shaft horsepower experimental gas turbine for use in railway locomotives," John S. Newton, assistant manager of engineering of the Steam Division, told the group. "At least two of these units could be installed in a single locomotive. This unit is the simplest form of gas turbine and its power is harnessed through generators and motors to furnish power to the locomotive driving axles.

"The gas turbine power output is sev-

(Continued on page 214)



rated no. 1 in refrigerators

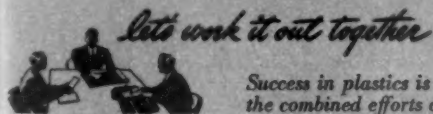


Styron is a name that is growing in the refrigerator and other forward-looking industries—with reason!

Modern refrigerators gain a new measure of attractiveness—along with rugged serviceability—with parts made from this Dow plastic. Styron's easy moldability, low water absorption and dimensional stability at low temperatures are qualities that give it unique value for profitable production of fine refrigerators. That's why Styron is rated No. 1 in making ice compartment doors, crisper fronts and

numerous other parts for today's leading refrigerators. But its broadly useful properties and low price dictate the choice of Styron for a wide variety of products. Styron conveys clear brilliance to costume jewelry and cosmetic containers. Its acid resistance recommends it for batteries. Its high dielectric strength and low specific gravity suggest an ever-growing list of applications.

In refrigerators, in numerous products—Styron is the name you can *depend* on in plastics!



Success in plastics is measured only in end products. It calls for the combined efforts of manufacturers, designers, fabricators and raw material producers. Dow is ready to do its part. Call on Dow and get the most out of plastics.

PRESENT AND POTENTIAL USES: Lighting fixtures; insulators, battery cases; hydrometers; funnels; closures; food handling equipment; pharmaceutical, cosmetic and jewelry containers; costume jewelry; novelties; refrigerator parts; pens; pencils; liquor dispensers; escutcheons; chemical apparatus; dishes; lenses; decorative objects, trim.

PROPERTIES AND ADVANTAGES: Clear, translucent or opaque; broad color range; excellent high frequency electrical insulator; can "pipe" light through curved rod, and around corners; resistant to acids and many alkalies; low water absorption; light weight; stable at low temperatures; limited solvent resistance; available only in rigid forms.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN • New York, Boston, Philadelphia, Washington, Cleveland, Detroit, Chicago, St. Louis, Houston, San Francisco, Los Angeles, Seattle



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STYRON • SARAN • SARAN FILM

IF IT WERE *Always* MIDNIGHT IN WINTER...



Sun glare is no problem when snow blankets the earth at midnight. Yet such night scenes, as above, demonstrate in reverse fashion the fine glare-reducing qualities of Blue Ridge *Frosted* AKLO.

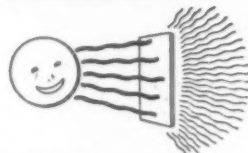
Shown here is the plant of Sylvania Electric Products Inc., at Huntington, West Virginia, fully lighted for night-time operation. However, there is no brilliant, blinding glare apparent through the windows. Rather, the light shining through is quite evenly diffused. The windows are glazed with *Frosted* AKLO industrial glass, made by the Blue Ridge Glass Corporation, Kingsport, Tennessee.

Frosted AKLO is a cool-appearing, blue-green glass with sun heat-retarding and glare-reducing properties. These advantages spell *savings* to management through increased production and in many cases through reduced spoilage of material. The ever increasing use of *Frosted* AKLO by industrial plants indicates it to be an investment that returns dividends.

For an interesting demonstration regarding the sun glare or excessive sun heat problems in your plant, ask your Libbey-Owens-Ford distributor to show you the Radiometer test on *Frosted* AKLO. For further information, write to Blue Ridge Sales Division, Libbey-Owens-Ford Glass Company, 9856 Nicholas Building, Toledo 3, Ohio.

GET THESE THREE ADVANTAGES OF

Frosted AKLO



REDUCES GLARE—Eliminates eyestrain and employee fatigue.



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RENDERS SAVINGS—Eliminates shades or painting of glass.



BLUE RIDGE AKLO GLASS

Heat-Absorbing • Glare-Reducing • Figured and Wire Glass



CLEANING AND CORROSION TIPS

Issue
No. 1

May

Published Monthly in the Interest of Advancing Metal Cleaning Progress

1946

TODAY, MORE THAN EVER, industry's profits depend upon improved plant performance and reduced plant production costs. Costs, perhaps secondary to increased production during the war, must now be examined in minute detail. Each process—even those which apparently function efficiently—must be checked for further improvement. It is our aim to aid the metal cleaning departments in American industry in producing better cleaned products at a faster rate and at *lower cost*.

W. P. Drake
Manager of Sales
Pennsylvania Salt Mfg. Company

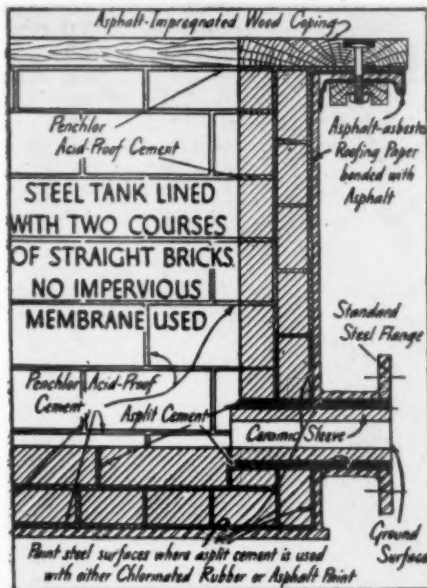
CASE NO. 401

Brass Company Saves \$170 A Month in One Operation

Removing Buffing Compound Without Discoloration Was the Big Problem

A well-known brass company was busy turning out spigots and other plumbing fixtures. Rejects were numerous since cleaners strong enough to remove the buffing compound from the brass prior to chrome plating had a tendency to discolor the metal.

After studying the problem, a Pennsalt man with his technical experience suggested one of the Pennsalt Cleaners, which not only met the exacting requirements of the job, but actually saved on an average of \$170 a month on the cleaning operation.



Cross-section view of a pickling tank in a large steel mill. Penn Salt's Penchlor Acid-Proof Cement and Asphalt Cement used in its construction.

CASE NO. 425

Cleaning 3 Metals at Once Cuts Cost 20% for Silverware Maker

In cleaning stainless steel, britannia metal and brass pieces, this manufacturer had found it necessary to use a different cleaner for each metal. The Pennsalt man suggested a cleaner which now cleans all three metals in the same solution at one time in both electrolytic and still tank operations—and slices cleaning costs 20%.

CASE NO. 451

Pre-Cleaning Eliminated on Adding Machine Parts

Guided by the precision demands of such parts as springs, bearings, and key arms, an adding machine corporation had been using a laborious pre-cleaning operation prior to electrolytic cleaning. A recent survey of the setup by the Pennsalt man resulted in the adoption of a certain Pennsalt Cleaner. The pre-cleaning operation was eliminated entirely and over-all cleaning costs were reduced about 60%.

CASE NO. 455

One Cleaning Process Replaces Three

Furniture Maker Finds Slow, Costly Hand Operations Unnecessary

Prior to electrolytic cleaning, tube frames in this factory were first given a sawdust cleaning followed by an actual hand-scrubbing operation.

A Pennsalt Cleaner, adopted on the recommendation of a Pennsalt man, with his knowledge of advanced metal cleaning, now cleans the tubing thoroughly in one operation and prepares the surface properly for the exacting chrome plating operations. Costly hand operations are out, production costs are down.

CASE NO. 475

Electrical Products Metal Cleaning Costs Down 28%

Use Same Cleaner Before Plating or Enameling

A maker of electrical products had experimented with many different makes of cleaners, trying to get junction boxes of low carbon steel really clean. Finally, he was forced to use one cleaner for those boxes to be enameled and another for those to be plated.

When the Pennsalt man was called in, he studied the problem and then, with his practical knowledge of cleaning methods, suggested a single Pennsalt Cleaner which is now cleaning both types of junction boxes thoroughly (for the first time) and actually cutting cleaning costs 28%.

THE LAB NOTEBOOK

Ultra Violet Light Aids in Testing Metal Cleaners



In testing the effectiveness of metal cleaners it is always necessary to know when the surface is clean. The use of ultra violet light immediately reveals unremoved soil (oils and greases) as shown by the above picture taken under ultra violet light. These tests were made at the Whitemarsh Research Laboratories.

YOU NEVER CAN TELL

Take the case of the production manager for one of the nation's largest automobile manufacturers. He was glad to see the Pennsalt man the morning he called. Not because the production manager had a problem. On the contrary, he was anxious to show the Pennsalt man, who had never visited this plant before, the efficiency of his cleaning setup.

As the two of them watched the cleaning operations, one question led to another; the Pennsalt man told the production manager the latest developments in advanced metal cleaning, and the plant's cleaning operations developed an entirely new aspect. Thinking along these lines, new cleaning ideas crystallized, until shortly, the production manager knew how the seemingly efficient cleaning operation could be materially improved.

As a result of this exchange of ideas, this automobile company's metal cleaning is now being done by a new method and with a Pennsalt Cleaner. Now as much cleaning is done in 320 man-hours as formerly required 3,000 man-hours.

THE POINT IS: No matter how efficient your cleaning operations are, the Pennsalt man may be able to help you turn out better work... faster... at a lower production cost.

If you would like to see the Pennsalt man, write to Dept. P. If your problem is urgent—wire, and he will call immediately.

ADVANCED
METAL CLEANING



PENN SALT

PENNSYLVANIA SALT
MANUFACTURING COMPANY

Special Chemicals Division
1000 WIDENER BUILDING, PHILADELPHIA 7, PA.
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PROTECTIVE SPRAY COAT
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Extremely tough. Remarkably beautiful. Soft eggshell finishes in all colors. Ideal for finishing stoves, heaters, mufflers, exhaust and tail pipes, metal filing cases, etc. Withstands heat up to 1000° F. Has very high resistance to corrosion, abrasion and impact.



Easy to work. Spray it on and dry at 200° F. Then bake at 350° F. in any industrial oven. Samples and details on request.

BLACK - MAGIC — A deep-penetrating, single-bath oxide that gives all steels except stainless a dense black that will not rub off. Very flexible. Forming may follow processing. Effective rust inhibitor. Fine paint and lacquer bond. Chemical reaction at 300° F. There are also BLACK-MAGIC baths for copper, brass, zinc, cadmium. Send for samples and the "Black Book."

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The Pure Oil Company, U. S. A.

Be sure

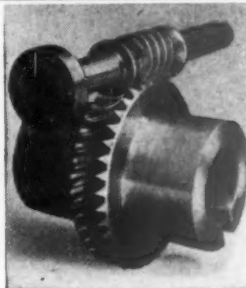


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WORMS
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Simonds Gears are made to meet the strictest demands—the result of over 50 years' experience and master craftsmanship in building quality gears. Large sizes are a Simonds feature—spur gears are cut up to 12 feet in diameter.

Distributors for RAMSEY
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**THE SIMONDS
GEAR & MFG. CO.**
25TH AT LIBERTY
PITTSBURGH 22, PA.

(Continued from page 210)

eral times that of a diesel of comparable weight and size and it is competitive with the diesel in fuel cost. Since no gas turbine has sliding parts, maintenance should be low.

"It now appears," Mr. Newton continued, "that there will be several gas turbine road locomotives in service on U. S. railroads within five years. However, this prime mover is so new and untried that it is not possible to predict the extent of its acceptance for railroad locomotive power service.

"The few experimental units now in operation or building require a liquid fuel. Coal must be the fuel before gas turbines will be widely used, and the difficulties that will be encountered when the burning of coal is attempted involve further research and development."

"Bounce-Buster" Smooths Railroad Rides

A mechanical ride stabilizer to provide new comfort for railroad travelers by holding the car body in line despite jouncing of the wheels caused by track irregularities was described by Clinton R. Hanna, associate director of the laboratories.

"The device, which in early tests has shown ability to improve riding qualities more than two to one over those of cars not so equipped, is a shock absorber with a 'college education,'" Mr. Hanna said. "In three thousandths of a second it sizes up the direction and extent of an impending bounce and takes appropriate counter-action almost before it gets started.

"A sensitive floating weight picks up first signs of any disturbance that might get through to the body of the car and acts to increase oil pressure in a cylinder, he continued. "The system is so devised that pumps can cause pressure in an expanding as well as a contracting cylinder. This pressure, exerted at just the right time and in the proper direction to oppose the disturbance, helps the wheels of the car move up and down at the same time it holds the body still."

Cylinders installed horizontally on the car also act similarly to restrain the normal tendency of the car to sway from side to side, Mr. Hanna said.

Silicones Conquer Motor Heat

Directing the thoughts of the newspapermen from the product to the materials field, L. R. Ludwig, manager of the Westinghouse Motor Division, declared that industry enters the era of peacetime production freed of many former limitations derived from insulating materials.

"During the war, the silicones — made by rearranging the molecular structure of sand and aligning it with molecules of coal, oil and brine — have developed rapidly," he said. "These materials can form the basis of resins, varnishes, paints and oils that reach new highs in their ability to withstand temperature and moisture extremes.

"Lack of adequate insulating materials has been one of the largest limiting factors in the design of electric motors," he

(Continued on page 218)



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THE **H.O.**
Canfield CO.



**SPEED UP out-of-position
welds with $\frac{3}{16}$ "...**



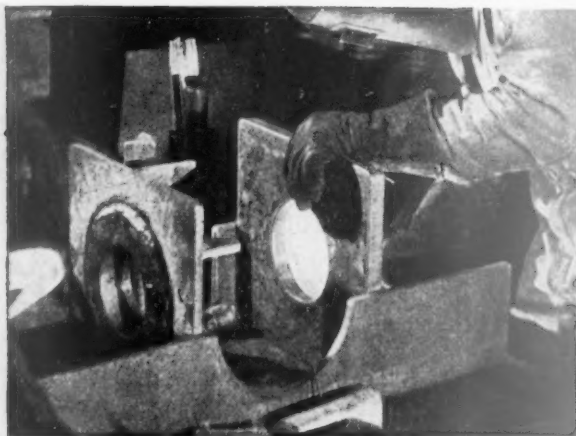
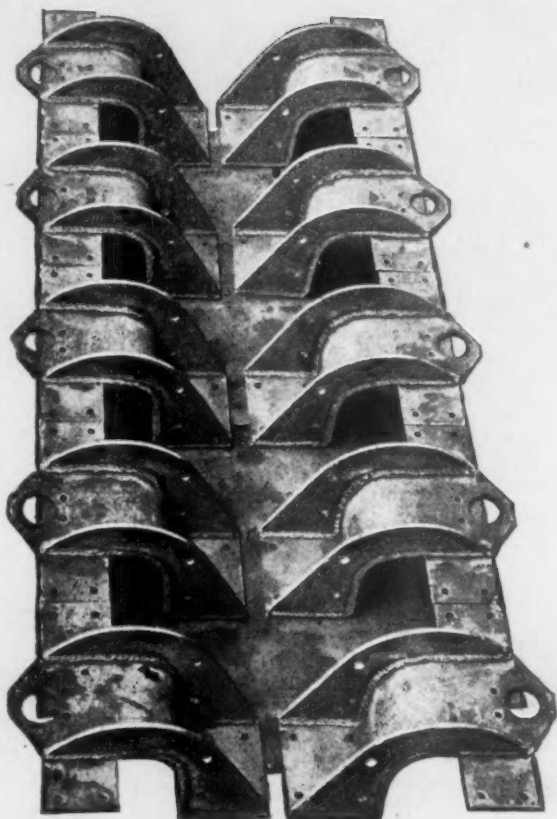
Because of its remarkable versatility, you can use AP size $\frac{3}{16}$ " in place of $\frac{5}{32}$ " on all types of joints—in all positions.

AP is easier to handle . . . it has a fine SPRAY-TYPE ARC. Its DEEP PENETRATION qualities assure strong, lasting bonds and produce X-RAY PERFECT welds. Its unusually LOW SPATTER LOSS means extra footage, increased production. Its exceptionally THIN, EASILY REMOVED SLAG greatly reduces cleaning time. AP gives you all these cost-lowering advantages.

AP also produces good tie-ins and fast, spot penetration without "humps" — it's a PERFECT TACKING ELECTRODE.

If you want lower costs on out-of-position welds, use AP.

Write for Data Sheet Giving Physical Properties, Applications and Procedures



FOR TACK WELDING — in any position—3/16" AP gives perfect results; quick, deep penetration, eliminating humps.

FOR INDUSTRIAL FABRICATION — in volume production, 3/16" AP provides fast downhand deposition and enables the operator to switch to vertical and overhead work without stopping to change electrodes.

FOR PIPE WELDING — here again, 3/16" AP is a big money-saver for butt welding and joining all types of fittings with its smooth-flowing, deep penetrating arc.



CALL YOUR P&H REPRESENTATIVE

P&H makes a production-proved electrode for every welding requirement: for all mild, alloy and stainless steel applications, cast iron and for building up and hard surfacing.

ON CONSTRUCTION WORK— 3/16" AP ends the need for frequent time-wasting changes to smaller electrodes when working from downhand to out-of-position welds.



P&H

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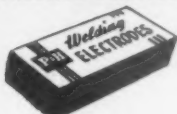
AMERICA'S MOST COMPLETE ARC WELDING SERVICE



DC Welders



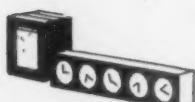
AC Welders



Welding Electrodes



Welding Positioners



Welding Production Control Systems

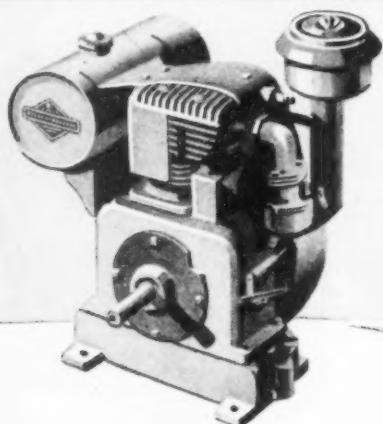


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Only BRIGGS & STRATTON Assures This Long Air-Cooled Engine Experience

There is no substitute for experience. Conclusive proof of this is the outstanding 26-year record for dependable performance set by Briggs & Stratton 4-cycle air-cooled engines. Only engines so sound in design—so ruggedly constructed with watch-like precision could have merited the world-wide preference which Briggs & Stratton engines have earned. Whether you are a manufacturer, a dealer, or a user, specify Briggs & Stratton engines and you are assured the "right" power for your equipment.

BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U. S. A.



Air-Cooled Power

(Continued from page 214)

continued. "With these new marvels of molecular engineering as much as 50 per cent reduction in weight of electrical equipment is possible where design limitations are based on insulation temperature.

"To a large field of motor uses where space, weight and load conditions are abnormally severe and in other cases where motors must work in high surrounding temperatures or in conditions materials open the way to greatly improved performance."

Mr. Ludwig declared that use of silicone insulations makes possible improved quality in many types of motors which will reduce the likelihood of insulation failure and increase motor life.

1 1 1

CYLINDRICAL PLASTIC CONTAINERS

As buyers of protective containers for use after merchandise sale, and as followers of Isaac Walton, purchasing agents will be interested in a cylindrical container extruded of Tenite II (cellulose acetate butyrate), announced as fishing-rod equipment. The containers are 1½" in diameter and a



The shatterproof material of cylindrical containers ably safeguards fishing-rod equipment.

little over 3 feet long; one end is protected by cemented Tenite disk, and the other is stoppered with a rubber plug. The tubes are made in several different colors, and the lustrous surface, and shatterproof material ably safeguard costly rods. The containers were extruded by Extruded Plastics, Inc., Norwalk, Conn.

1 1 1

DIFFUSION TYPE MOLECULE PUMP WITHOUT MOVING PARTS

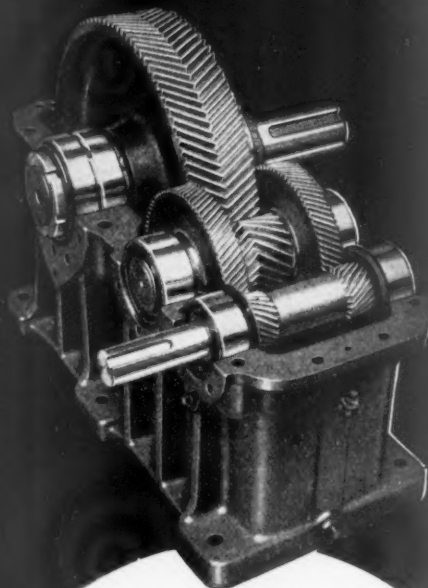
The ether—in which there is supposed to be a complete absence of matter—is an interesting hypothesis. It is unobtainable—but engineers have come surprisingly close to it. In the laboratory, with refined equipment, vacuums of one millionth of a millimeter (10^6 mm) of mercury have been drawn. Sea-level air

(Continued on page 220)

To help you solve THE PRODUCTION PROBLEM

JONES WORM-HELICAL SPEED REDUCERS for vertical shaft drives

● These machines fill a long felt need for double reduction units of the fully enclosed type to be used for agitators, mixers, ore roasters, bending rolls, etc., requiring a vertical shaft drive. Built in standard ratios in various types of assemblies ranging from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings. Jones Bulletin No 75 covers complete details.

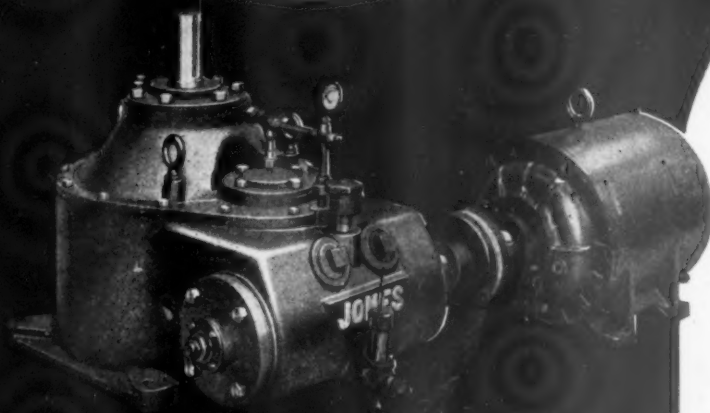


JONES HERRINGBONE SPEED REDUCERS

● Jones Herringbone Speed Reducers are built in single, double and triple reduction types with a large range of ratios and ratings making it possible to fulfill all ordinary requirements by the selection of standard units.

All these reducers have heat treated gears, ground shafts and are mounted with anti-friction bearings throughout.

Catalog No. 70 contains 128 pages of detailed information on the application of these speed reducers.



"JONES DRIVES FOR INDUSTRY"

is the title of a 16-page bulletin that may be helpful in giving you a broad picture of the Jones products, engineering services and manufacturing facilities that are available.

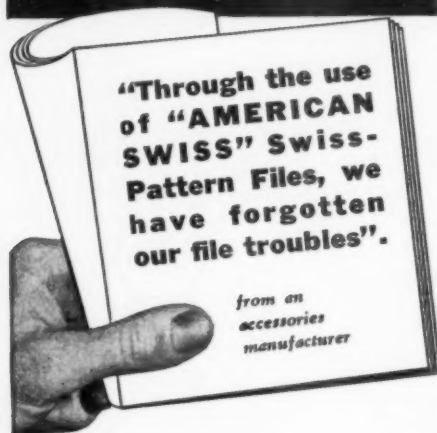
Just ask for Bulletin No. 80

W. A. JONES FOUNDRY & MACHINE CO.
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HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • PULLEYS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

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(Continued from page 218)

pressure is 760 million times greater. Pressures down to one hundredth of a millimeter of mercury (ten microns) are commonly obtainable with rotary-type pumps. Such pressures, regularly maintained in vacuum tubes and mercury-arc rectifiers, have been generally low enough for industrial purposes, before the war anyway. But certain war-production processes—still secret—demanded much lower pressures, and in enormous volumes. Huge pumps capable of drawing vacuums of one millionth of a millimeter of mercury were required in quantity.

No rotary pumps can do this job alone. Engineers at the Westinghouse Research Laboratories fell back on a pump principle previously known only in laboratories and in very small, special industrial units. It is a pump operating without moving parts on the diffusion principle.

The pump consists of a vacuum-tight cylinder with water-cooling coils on the outside, inside of which is located a jet assembly consisting of one or more jets in series. A pool of oil at the base of the cylinder is heated and the oil vapor passes up through a central pipe in the jet assembly and, on reaching the top, is deflected downward by the jet as a cone shaped spray against the wall of the cylinder. This wall of downward moving oil vapor traps and carries out the gas molecules from the region above. The oil vapor is then condensed by the water-cooled wall of the outer cylinder and returns to be used over again. The gas has now become concentrated sufficiently so that it can be pumped off by a good rotary pump. Rotary pumps and diffusion pumps are used in series, the rotary pumps doing the large-volume, coarse-vacuum portion of the task while the diffusion pumps carry the vacuum on down to the desired degree.

Before the war, diffusion pumps were small. The four-inch diameter pump was tops in size. Now they are built in sizes eight times larger in diameter.

"PLASTIGLAZE", A NEW TYPE RESIN FOR PLASTER CASTS

A new-type synthetic resin, which will make a cheap plaster cast as strong and durable as an expensive plastic molding, has been developed by Duorite Plastic Industries, Culver City, Calif.

It is called "Plastiglaze," and it is an air-setting material produced by combining various thermoplastic and thermo-setting resins in the presence of any one of several solvents. Normally, it is transparent. But it can be colored with numerous common pigments.

With Plastiglaze, it is possible to strengthen and beautify a plaster cast in a single operation—simply by immersing the cast in the resin for about a half hour. It dries in open air at normal room temperatures in about 4 hours, or in 20 minutes if placed in an oven which is set for a temperature of 150° F. If only a surface coating is desired, Plastiglaze may be applied like paint—by

brushing, spraying or dipping. It produces a glossy finish, like enamel.

Tests have revealed that the impregnated plaster casts are so strong they can be dropped on the floor without breakage, and immersed in solutions of water and acid for days without deterioration. No adverse effects have been noted as the result of exposures to temperatures of less than 200° F.

Plastiglaze has also been used to strengthen and beautify porous materials such as wood, Firtex, and cardboard. It is said that a one-inch-square cardboard flower pot can be so strengthened by the resin that it will support the weight of a 200-pound man.

1 1 1

CARBON MILLING CUTTER FEED-SPEED CALCULATOR

An ingenious new slide-rule type device is being made available to machinists for calculating the proper "feed" per tooth per revolution for all types of carbide milling cutters.

The device, called a "Feed and Speed Calculator," also shows the suggested rate of speed for machining many differ-



ent kinds of materials to rough and finished states. The reverse side of the calculator shows the relation of revolutions per minute on the cutter head, and the surface speed in feet per minute, to the diameter of the work. Printed on it are a table of decimal equivalents of fractions.

The calculator can be obtained from Wendt-Sonis Company, Hannibal, Missouri, makers of standard carbide tipped cutting tools.

1 1 1

CARBIDE TIPPED MASONRY TOOLS SAVE FREQUENT SHARPENING

A line of Carboloy cemented carbide tipped and faced masonry tools recently introduced by a Detroit organization is reported to be giving excellent results. The development had its inception when Ralph Gwinn, a brick mason asked his son Myron, who worked at Carboloy Company, Inc., to consult the company regarding the troubles he had with his regular tools—involving frequent sharpenings, etc.

A set of masonry tools, comprising a scutch to trim bricks, a brick hammer, with Carboloy metal on both hammer head and cutting edge, a tile setter hammer, and a three inch brick set used to cut glazed brick were tipped with Carboloy, and ground to shape.

The results, according to Gwinn were so surprising that—after a month with not a tool requiring sharpening—the Gwinns decided to go into the manufacture of Carboloy tools for the masonry trade. The business is reported to be flourishing.

**WHAT HAVE
THESE TWO THINGS
IN COMMON?**



WEIRTON
HIGH-CARBON STRIP
COLD-ROLLED SPRING STEEL

A bobby-pin and a can opener may not seem to have much in common, but these two items share a big advantage: both use an improved spring steel that holds wide possibilities for making better parts and products with reduced manufacturing costs.

Weirton High-Carbon Strip cold-rolled spring steel is supplied in spheroidize-annealed form—ductile for easy cold-forming, stamping and blanking. It has accurate response to heat treatment, exceptional uniformity of gauge and width, rigidly controlled chemical and physical properties, exact constancy of grain structure, and controlled decarburization limits.

Supplied with desired chemical analysis, and for specific heat-treating and hardness ranges, in strips up to seven inches wide. Write for information.

WEIRTON STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



This Man's A Fighter



HIS WEAPON—BAUER & BLACK INDUSTRIAL TAPES



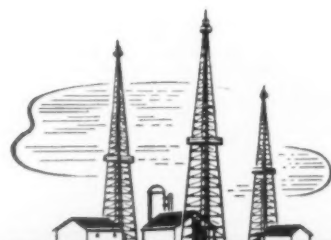
He Licked Zero Weather

Industrial Tape No. 610 stays flexible and **STICKS** at subzero temperatures. For deep freeze use.



He Hit Hard At Heat

No. 201—a high-temperature masking tape, withstands heat up to 300° F. and still pulls off clean.



He Battled Oil

No. 264—oil-proofed, and resists flame. Used with machine parts exposed to oil and heat.

He Can Fight for You, Too

Bauer & Black Technical Consultants have battled with heat, cold, electricity and moisture. They've had great success developing specialized tapes to resist these agents for individual manufacturing requirements.

A Consultant will be glad to look over **YOUR** operations, *with no obligation to you*, for time-saving, inexpensive ways of using tape. He may

effect substantial savings or speed-ups for you. **WRITE** Dept. 25 today to have him call. Ask also for our stimulating monthly **AUTOMOTIVE NEWS LETTER**. It's free. Bauer & Black, *Division of The Kendall Company*, 2500 S. Dearborn St., Chicago, 16, Ill.

WE HAVE TAPES ALSO FOR:

- Bundling, anchoring, repair
- Masking, protection, sealing
- Waterproofing, weatherproofing, marking
- Insulating, electrical uses

Products of

BAUER & BLACK

Division of The Kendall Company • Chicago 16

Industrial Tape
PRESSURE SENSITIVE ADHESIVE

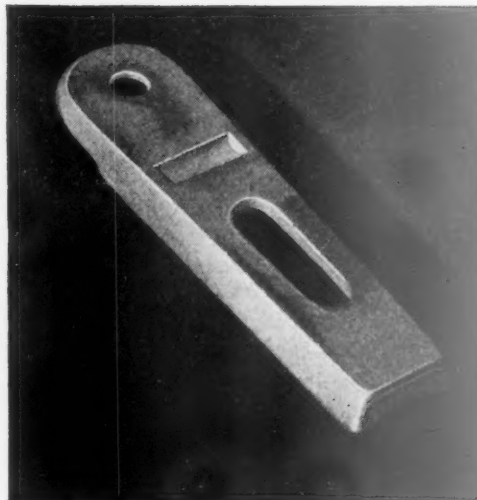
Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

SCOVILL

NON-FERROUS

FORGINGS

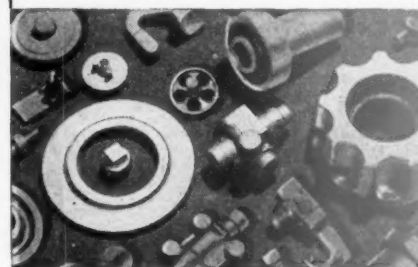
*When SCOVILL becomes your METAL-PARTner
QUALITY GOES UP, COSTS STAY DOWN
ON CHROME-PLATED PARTS like these.*



BEFORE SCOVILL: This base part of a surgical instrument was formerly made from sand castings. Grinding and buffing costs ran high and defects uncovered by these finishing operations caused about 10% rejections. Complaints about the inability of the chrome plating to stand up under repeated sterilization were serious.



TALK IT OVER WITH SCOVILL. Maybe your brass, aluminum or other non-ferrous metal parts can be improved in quality or lowered in cost by a similar change to another method or design. Our long forging experience may be of value to you. Investigate whether you, too, can benefit from making Scovill your METAL-PARTner. Fill in the coupon and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn. *Export Department:* 405 Lexington Ave., New York 17, New York.



AFTER SCOVILL: With Scovill forgings, the customer saves approximately 6¢ per piece in finishing costs alone, reduces rejects to zero. And because the dense structure that results from forging permits better chrome plating, the customer has an improved product at lower cost.

Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

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| <input type="checkbox"/> Automobiles | <input type="checkbox"/> Household Appliances |
| <input type="checkbox"/> Band Instruments | <input type="checkbox"/> Industrial Instruments |
| <input type="checkbox"/> Blow Torches | <input type="checkbox"/> Plumbing Goods |
| <input type="checkbox"/> Cameras | <input type="checkbox"/> Pumps |
| <input type="checkbox"/> Communication Equipment | <input type="checkbox"/> Valves |
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Other applications.....

SCOVILL MANUFACTURING COMPANY

Forgings Division
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Waterbury 91, Connecticut

Name

Company

Address

Among the ASSOCIATIONS

Gardner Heads P. A. A. of E. N. Y.

Large Attendance Features Executive Night Meeting —
Purchasing Agents Warned to Analyze Fundamentals of Current Economic Situation.

William B. Gardner, purchasing agent, Socony-Vacuum Oil Co., Inc., Albany, N. Y., was elected president of the Purchasing Agents Association of Eastern New York, at the Annual Executive Night meeting of that body held in the DeWitt Clinton Hotel, Albany, March 21st. Other new officers elected are as follows:

Vice President, Harold H. Frair, Glen Falls Insurance Company, Glen Falls, N. Y.;

Secretary, Richard Van Laer, Hudson Valley Paper Co., Albany, N.Y.

Treasurer, Stephen C. Main, National Commercial Bank & Trust Co., Albany, N. Y.

National Director, George B. Tod, Schenectady Varnish Co., Schenectady, N. Y.

Executive Committee: Alden J. Tailby, A. P. W. Products Co., Inc.; F. J. Martin, Adirondack Foundries & Steel Co.; and, Paul Smith, Bayer Divn., Winthrop Chemical Company.

The meeting was presided over by

President George B. Tod, who first introduced the following out of town visitors: L. A. Clark, president, P. A. A. of Elmira; A. W. Zackey, vice president, 8th District, N. A. P. A., Philadelphia; R. L. Cavanaugh, president, P. A. A. of Buffalo, A. M. Morse, manager, *Purchasing Magazine*, New York; and Hon. Mills Ten Eyck, mayor of Schenectady. The speaker of the evening was A. W. Zelomek, president of the International Statistical Bureau, Inc., New York, who presents a weekly analysis of economic conditions in the *Bulletin of the N.A.P.A.*

More than 250 executives, purchasing agents and guests attended the meeting which President Tod declared was the largest gathering in the 26 years' history of the association. Following a word of greeting by Vice President A. W. Zackey, 8th District, Past President J. Leland Hodgkins read the report of the National Director, Harry L. Erlicher, in the latter's absence. The report stated that the membership of the association, which

(Continued on page 226)



Front: President, Wm. B. Gardner; Treasurer, Stephen C. Main; Standing: Secretary, Richard Van Laer; Vice President, Harold H. Frair; National Director, George B. Tod.

CONNECTICUT ASSOCIATION MARKS NATIONAL NIGHT

President Charles L. Sheldon of the N. A. P. A. was the principal speaker at the "National Night" meeting of the Purchasing Agents Association of Connecticut at the Hotel Stratfield, Bridgeport, Conn., March 26th, his subject being "Purchasing, Postwar." President W. J. Roemer presided at the meeting which was attended by more than a hundred members and guests. Other speakers were Vice President Everett Taylor of District



"Purchasing is now recognized as one of the most important departments of modern business," President Charles L. Sheldon.

No. 9 of the National Association, and National Director Wm. Horowitz. Mr. Taylor briefly reviewed the duties of the vice presidents of the National, and the activities of the National Association and Mr. Horowitz spoke about the forthcoming National Convention to be held in Chicago May 27, 28 and 29, urging members to make reservations immediately.



President Wm. J. Roemer presides at the Hotel Stratfield meeting, Bridgeport.

In the course of his talk Mr. Sheldon stated that today the U. S. is producing more goods than ever before in history, saying, "but I can't buy them and many other purchasing agents are in the same predicament." Commenting on current buying practices he said, "We have got-

(Continued on page 258)

MODERN HANDLING METHODS



Now a Must!



There's no time to lose in getting operating costs on a competitive unit-cost basis. Modern methods of handling are now a *must*. Electric industrial trucks, for example! Palletized loads! And, of course, the newest development in motive power Storage Batteries . . . the sensational Philco "Thirty" that gives 30% longer life! Try Philco "Thirty" in your hardest-working trucks. The tougher the job the better it shows up. Write for the facts today.

● The new Philco "Thirty" Industrial Truck Storage Battery, that gives 30% longer life, is identified by its distinctive red connectors.

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FOR 30 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

Time: 10:00 P.M. Radio Hall of Fame, with Paul Whiteman and His Orchestra, Sunday, 6 P.M. EST, 7:30 P.M. CST, 8:30 P.M. MST, 9:30 P.M. PST. Radio: Don McNeill, 10:00 A.M. EST, 11:00 A.M. CST, 12:00 P.M. MST, 1:00 P.M. PST. ABC (Blue) Network.

PHILCO CORPORATION • STORAGE BATTERY DIVISION • TRENTON 7, NEW JERSEY

(Continued from page 224)

was organized in 1920, now stands at 72 active members, 10 associate members, and nine honorary members, marking a growth of 100 percent in the past five years.

Following a brief talk by C. P. Spuck on the forthcoming annual convention of the N. A. P. A. which is to be held



President George B. Tod presides.

in Chicago May 27, 28 and 29, President Tod called upon Stephen C. Main, now completing his 13th term (re-elected) as treasurer of the association, paying tribute to him for his loyal service and successful handling of the functions of that office. Following the report of the nominating committee, Amos K. Munson, chairman, Mr. Tod introduced the speaker of the evening, A. W. Zelomek.

Reviewing unsettled conditions in the Near East and the Far East, Mr. Zelomek stated that it is not easy to determine "where we are headed," and appealed to his hearers to take a more definite "interest in the world you live in." "We are the



Chas. J. McNery collocates the identification badges.

last remnant of civilization", he said, "and in the next 15 to 25 years there will be a showdown. We are the last hope of civilization and we cannot assume our responsibilities by merely sitting back and forgetting about the world we live in. The American people must assume world leadership." He warned, however, that at present the American public seems widely indifferent and doesn't seem to "care a whoop where it is going, why it is going, or how it goes."

Reviewing business activities he said that industrial production will average 50 to 70 percent above prewar levels for

(Continued on page 232)

800 At New York Purchasing-Sales Dinner

Eric Johnston Speaks on "Road to World Peace"
Renard Warns of Hectic Months Ahead

More than 800 purchasing agents, sales managers and other representatives of management of metropolitan New York's leading industrial and commercial firms attended the annual Purchasing-Sales Dinner of the Purchasing Agents Association of New York which was held in the grand ball room of the Commodore Hotel, New York City, on March 20th. President Harold W. Macintosh of the New York Association presided.

Following pertinent "comment" by George A. Renard, secretary-treasurer of the N. A. P. A., the meeting was featured

way from the American people. But as a symbol, nothing could be closer. It is a test of whether nations, like people, will keep their word. The Russian leaders boast that they always keep their word. Here's a chance to make good their boast."

Mr. Johnston quoted Premier Stalin as having said to him, "Foolish Hitler has done one good thing. He has brought the American people and the Russian people together. We must never allow anything to come between us again. We must work together after the war."



Charles L. Sheldon, president, N.A.P.A.; Eric A. Johnston, president, United States Chamber of Commerce, feature speaker and President H. W. Macintosh of N.Y.P.A.A.

by an address by Eric A. Johnston, president of the United States Chamber of Commerce, and president of the Motion Picture Association, whose subject was "Road to World Peace".

In his opening remarks Mr. Johnston stated that as of the moment we can look forward to full production by the fall of this year, and that if things progress in an orderly way, we may have a near labor shortage by fall.

"We are up against a new crisis", he said. "This time it is international, not domestic. It is the specter of another war. This is the question—'Are We Going to have trouble with Russia?'"

Reviewing his six weeks' visit to Russia in 1944, and interview with Stalin, he said, "My thought then is the same as it is now. The two systems can live side by side. I refuse to believe we can't find a way to cooperate. There must be give and take, but there are basic principles in cooperation."

"If a nation gives its word that it will do a certain thing on a certain date, that nation is expected to live up to it."

"Appeasement is weakness, and we are not weak. Iran today has become a symbol to the American people. Iran is a long

Emphasizing that the United States wants to be on friendly terms with Russia, Mr. Johnston added, "But we don't cooperate in a vacuum. Cooperation must be based on mutual trust and mutual acceptance of principles."

Executive Secretary George Renard of the N. A. P. A. in the course of a pithy address said that he found that purchasing executives are not as unanimously optimistic about business possibilities as some others apparently seem to be, and that they are not so certain everything will be rosy regardless of what business may do or what Government may do. "The next few months", he declared, "may well be the most hectic in the history of buying and selling. We know there are two major factors now or any other time that influence individual prices and also determine if the overall trend is inflationary or deflationary - They are supply and demand."

"An abundance of money - purchasing power - is an economic explosive. Scarcities and shortages of materials and products are also economic dynamite. We are sitting right under the gun facing both barrels of those economic explosives

(Continued on page 228)



Air brake parts made from Duronze III have exceptional wear and corrosion resistance.

PRODUCT IMPROVEMENT THROUGH ***DURONZE III...**

**...makes a stronger,
easily machined
air brake part!**

To the designer, engineer or purchasing agent, on the look-out for new and better materials to give products and parts greater strength and longer life, we suggest Duronze alloys.

Bridgeport's Duronze III, an aluminum bronze alloyed with silicon, out-wears and out-performs ordinary materials when used in engineering construction for hot forged bolts and nuts, marine and builders' hardware, gears, pinions, electrical connectors, valve stems, hot forgings, screw machine parts and many other applications. Duronze III has a tensile strength of about 85,000 psi in rod form when annealed; weighs 9% less than naval brass; has good corrosion resistance and a low coefficient of friction. Moreover, it is free machining.

Producing dependable parts for today's superior equipment calls for improved materials that will do old jobs better and new jobs best...materials of greater strength, lighter weight and better corrosion and fatigue resistance. Discover the possibilities inherent in Bridgeport's modern engineering alloys—aluminum bronzes and silicon bronzes. Write for the 80-page Duronze Manual on your company stationery.

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CM HERC=ALLOY SLING CHAINS

boast service records as long as your arm

Ask any plant executive or safety engineer who has used CM Herc-Alloy Sling Chains...their experiences will prove the reasons why that once they are put on a job they "stick." In fact, CM Herc-Alloy Sling Chains shipped years ago are still in service.

The patented Inswell electric welded links and all fittings are of Herc-Alloy formula steel with a tensile strength of 125,000 lbs. per square inch...a safety factor of 150% compared to ordinary sling chain. Herc-Alloy seldom, if ever, requires annealing.

There is a size and type to handle **your** job and prove in service that here is sling chain value **plus** by any method of figuring.

Get all the details now from your mill supply distributor or write us.

COLUMBUS=McKINNON

CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.

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(Continued from page 226)

which create inflationary conditions.

"Should we cut loose all controls and soar through a quick, dangerous boom into a 'bust'? I don't think so. I believe there is a middle course that will give us the production needed to move us out of range of these economic explo-



A. M. Morse, Manager, Purchasing Magazine, and David M. Meeker, vice-chairman, general committee.

sives, and only production can do it now. We must find and adopt a course that permits representative business and industrial organizations to expand production and distribution. That means permitting them to function normally, legitimately and profitably. We must allow the best elements of business to be the guiding influence in determining the prices and expanding production.

"I doubt if it would be good politics to remove all price controls. But government must realize that the essential business factors - costs and profits - are involved if we are to get production.

"We should openly adopt the bulk-line pricing procedure rather than remove all controls and limitations. Under bulk-line pricing you determine how much production of any scarce commodity is



W. G. Parry, Ind. & Com. S. M., N. J. P. & L. Co., Dover, N. J.; Frank Haury, U. S. Metals Refining Co., Carteret, N. J.; C. W. Parker, Pur. Agt., N. J. P. & L. Co.; J. E. Hurley, J. E. Hurley Lumber Co., Perth Amboy, N. J.; and N. W. Bowman, General Refractories Co., New York.

needed, and set a price that will develop and float that production, instead of relating it to profits of 1936-39 or some technical formulas that keep 38,000 on the OPA payroll."

Concluding his talk, he said: "Remember that any plan or program no matter how cockeyed or halfbaked will get consideration and usually win out if the other fellow has no plan to offer. So, have a plan. Brief yourself regularly on your mission. Have an alternate landing field selected. Watch your logistics. Keep your supply lines open. Keep an eye on the escalator clauses. Suppliers

(Continued on page 258)

WHAT'S YOUR precision PROBLEM?
— here's a "honey"
that was solved by

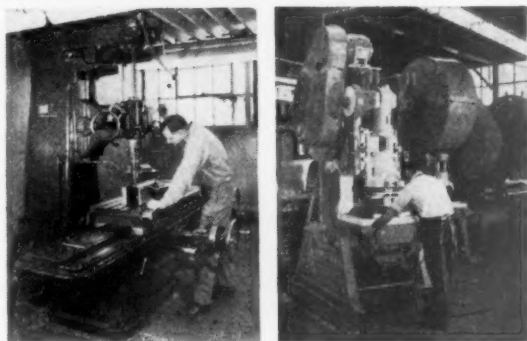
COLGATE

**"ENGINEERED SERVICE" in
ALUMINUM, MAGNESIUM, STAINLESS STEEL**



The manufacture of this Pharmaceutical curing tray may look like an easy job—but it turned out to be a "honey" that required COLGATE'S precision skill and specialized experience in working with Light Metals. The completed assembly had to be light yet strong enough to withstand considerable and continued abuse during the curing process required in the production of Penicillin.

The specifications called for the fabrication of Light Metal strips produced to a very close tolerance, in order to attain a .005" dimension for the hexagon when the assembly of the framed honeycomb was completed. The strips were accurately blanked and pierced, then bent to form one-half of the hexagon, after which they were securely positioned in a unique jig for approximately 250 spot-welds. All tooling, fabricating, and assembling operations were of a necessity held to close tolerances. Specially designed tools and dies were developed on high precision machinery of the Jig Borer type.



The manner in which these engineering and production problems were solved is a typical example of the time and money saving features of COLGATE'S "Engineered Service." This unique service offers to manufacturers design and engineering aid in the form of preliminary conferences that solve problems before designs have been started, also after blueprints have been prepared. COLGATE'S sales-minded designers and engineers will help develop your new product ideas, improve old products by substituting Aluminum, Magnesium, or Stainless Steel for other materials and give your product these sales-building features—lighter weight, added beauty, increased strength and durability, resistance to corrosion, improved product performance, lower shipping weight.

COLGATE can help solve your problems and function as your "branch factory" by providing ample space, supplying the specialized skills and know-how for fast, economical fabrication and assembling of precision parts—and get your product to market faster by meeting delivery dates with dependable regularity. For immediate action wire or write, no obligation, complete confidence assured.

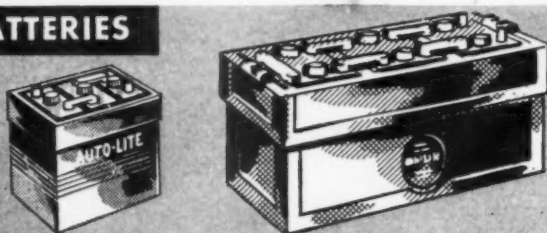
Complete and centralized facilities include this precision Jig Borer, Hydraulic Presses 10 to 750 tons, Mechanical Presses 2½ to 200 tons.

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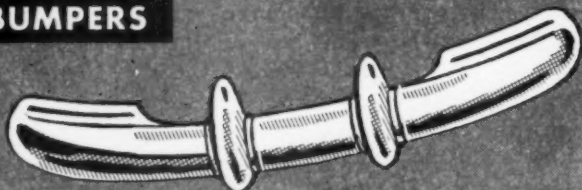
BATTERIES



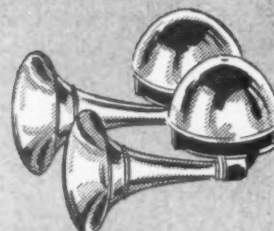
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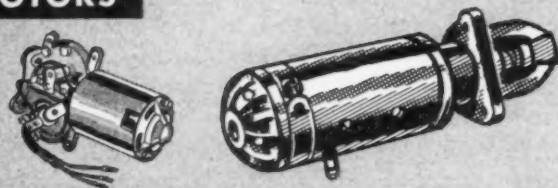
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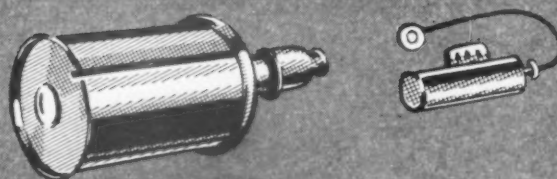
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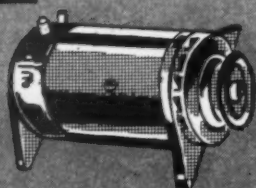
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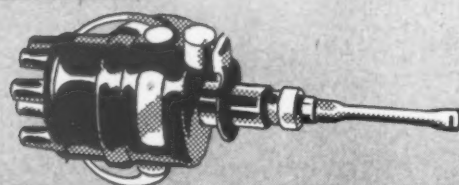
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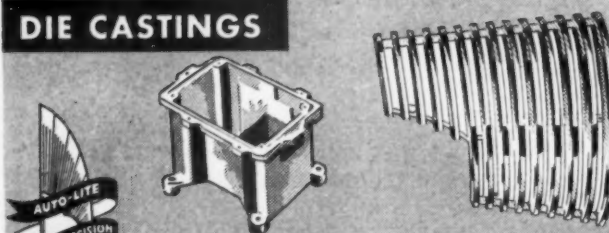
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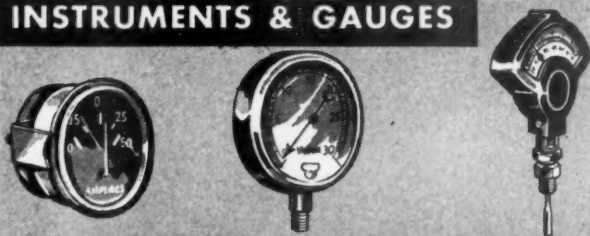


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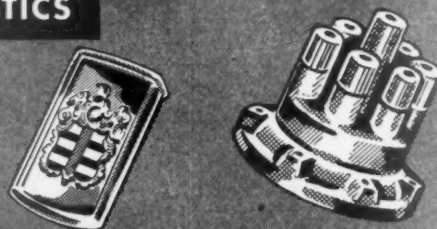
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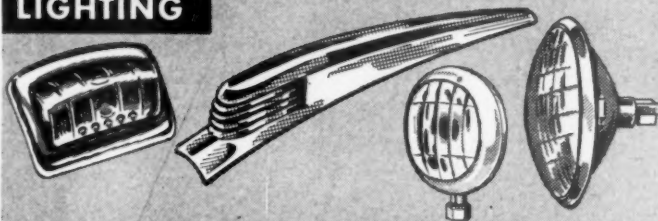
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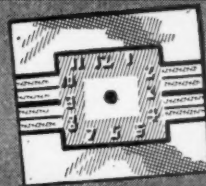
PLASTICS & METALS



LIGHTING



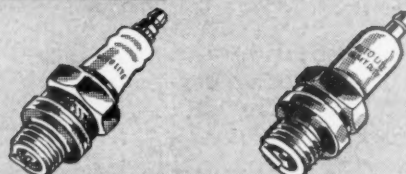
ORNAMENTATION OF METALS



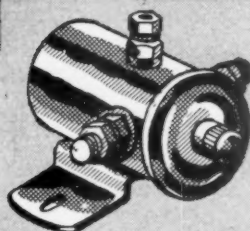
AVIATION SPARK PLUGS



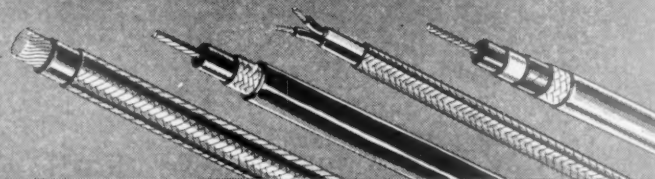
SPARK PLUGS



SWITCHES



WIRE & CABLE



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Mr. Fillet Weld WINS ON A WALKWAY

• When it comes to running a walkway, Mr. Fillet Weld is a winner every time. That's what makes **BATES • GRATES** the right choice for walkways in your plant.

**These championship
qualities go into**

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• **Longer lasting**—the Fillet Weld and Hex Bar Construction makes **BATES • GRATES** more durable. Their strength exceeds all former standards set for open steel flooring and stair treads.

• **Safer**—the combination of Hex Bars and Fillet Welding provides clean, crisp, **SAFE** grating.

• **Better ventilation and light**—the reflecting bevels of the Hex Bars, with 90° corners, allow maximum transmission of light and air.



(Continued on page 226)

the next few years, though he said he was not convinced that this high level of production would absorb all those who are looking for work, and jobs will not be so plentiful later on.

Mr. Zelomek said that the extra plant capacity born of war needs has proved far less than expected, and that much of the expansion during the war was in the development of industries that do not

"There have been more new concerns and business formed and more new stores opened in the last six months than in any other 6 months in American history. In a little town in the West 19 new appliance stores started since V-J day. In another town, 27 appliance stores opened. The warehouses are full. Everybody wants to keep something tangible instead of cash. The bankers may want cash later and ask for it. 1946 and 1947 are moving some-



George H. Brohm, Jr., Assistant Director of Purchase and Richard S. Persons, Commissioner, Division of Standards and Purchase, Albany, N. Y.; Frank M. Roos and Frank Hoffman, Consolidated Car Heating Co., Inc., Albany; Paul W. Smith, Bayer Company; and, Hon. Mills Ten Eyck, mayor of Schenectady, Wm. B. Gardner, and Ward Alexander, city purchasing agent, Schenectady.

affect today's markets.

Commenting on the housing situation he stated that we are ten years' behind in residential building, and that so far we haven't built as many houses as have been destroyed by fire since 1927.

"Look at fundamentals", he emphasized. Everybody wants higher prices. We give them higher prices. They haven't enough yet. But all I say to you as Purchasing agents is 'worry about OPA, but study fundamentals. Watch the situation as it unfolds itself. I hope we can avert a break. But I am wondering.

what similar to 1926 and 1927. Whether we are going through the same experience I do not know. We never learn. At the present time we are on an economic spree. You cannot ignore fundamentals."

TALK ON ATOMIC ENERGY

Dr. Robert D. Fowler, professor of chemistry, John Hopkins University, spoke on Atomic Energy at the regular monthly meeting of the Purchasing Agents Association of Baltimore at the Lord Baltimore Hotel March 20th.



INFORMATION for Purchasing Agents on STAINLESS WELDING FITTINGS

Pittsburgh Piping Stainless Welding Elbows simplify piping fabrication and save valuable time. Made in 90° and 45° styles in Stainless Type Nos. 308, 316, 317, and 347. Sizes 3/4" to 8". Bulletin S-306 describes the complete line.

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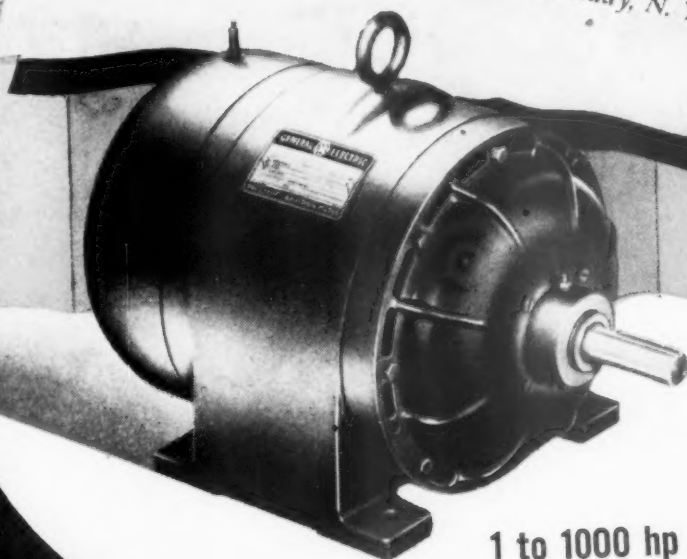
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Today, we are ready with a new line of Tri-Clad motors—*totally enclosed, fan-cooled motors*—built on Tri-Clad design principles in both standard and explosion-proof types.

We believe that these are industry's most dependable motors. They are designed specifically for use in many adverse atmospheres—in iron dust, outdoors, in hazardous areas, and chemical atmospheres. Their scope of application is as wide as the field of industrial motor use. Safeguarded against most sources of motor damage, their longer life and lower maintenance will make them economical motors for use on almost every job. General Electric Company, Schenectady, N. Y.



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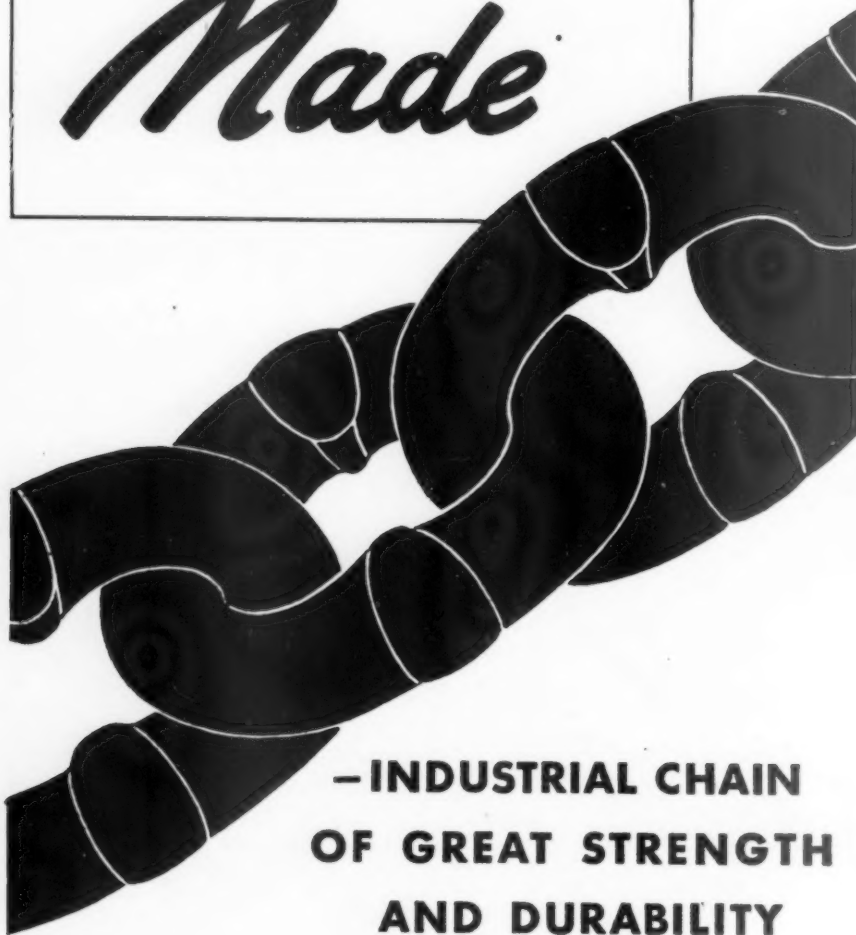
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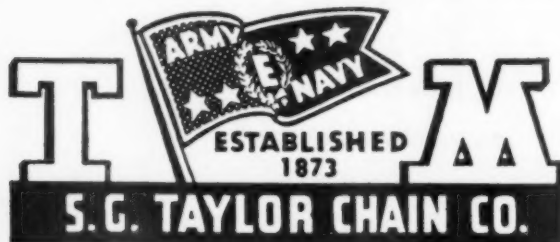
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DIVERSIFIED PROGRAM FEATURES CHICAGO MEETING OF EDUCATIONAL BUYERS

Commencing with Executive Committee and Convention Committee meetings on April 30th, and Directors' Meeting and Business Officers' Conference the morning of May 1st, the Twenty-Fifth Annual Convention of the Educational Buyers Association at the Edgewater Beach Hotel, Chicago, was formally opened with "Warm-Up party the evening of May 1st, at which Thurman Sensing, Research Director of Southern States Industrial Council spoke on "What's New in Red Tape". Dr. Francis J. Brown of the American Council on Education addressed the Business Officers' Conference on Veterans Housing and other business problems.

Convention Program

May 2: General Session, Francis G. Martineau, Purchasing Agent, Brown University, presiding officer. Addresses: "What's New In Purchasing", George A. Renard, Executive Secretary, N.A.P.A. "Your Purchasing Department through a Fluoroscope", Leslie F. Robbins, Purchasing Agent, University of Colorado.

Discussion—Robert B. Jenkins, Professor of Marketing, New York University, leader. Luncheon.

General Session, Gerald D. Henderson, Business Manager, Vanderbilt University, presiding officer. Addresses:

"What's New in Visual Education," O. H. Coelln, Executive Secretary, Visual Equipment Manufacturers Council.

"What's New in Protective Coatings," Dr. J. S. Long, Director of Research, Devoe & Reynolds Company.

Discussion—Foster Cole, Purchasing Agent, Miami University, leader.

May 3: General Session, Charles Hoff, Financial, Secretary, University of Omaha, presiding officer. Addresses:

"Awarding Contracts for New Construction and for Capital Equipment," E. Todd Wheeler, Associate Architect, University of Illinois.

"What's New in Construction Materials," Carl M. F. Peterson, Sup't of Buildings and Power, Mass. Institute of Technology.

"The College Store as a Buying Agency," Russell Reynolds, Executive Secretary, National Association of College Stores.

Discussion. Luncheon.

General Session, Edward K. Taylor, Business Manager, Cornell University Medical College, presiding officer. Addresses:

"What's New in our Cooperative," D. F. Watson, President of Educational and Institutional Cooperative Service, Inc.

Discussion of Contracts of the E & I Cooperative Service, Inc.

E. B. A. Commodity Discussion and Question Box, Harlan Kirk, Purchasing Agent, Iowa State College.

Social hour. Annual Banquet.

May 4. General Session, James J. Hit-

(Continued on page 238)

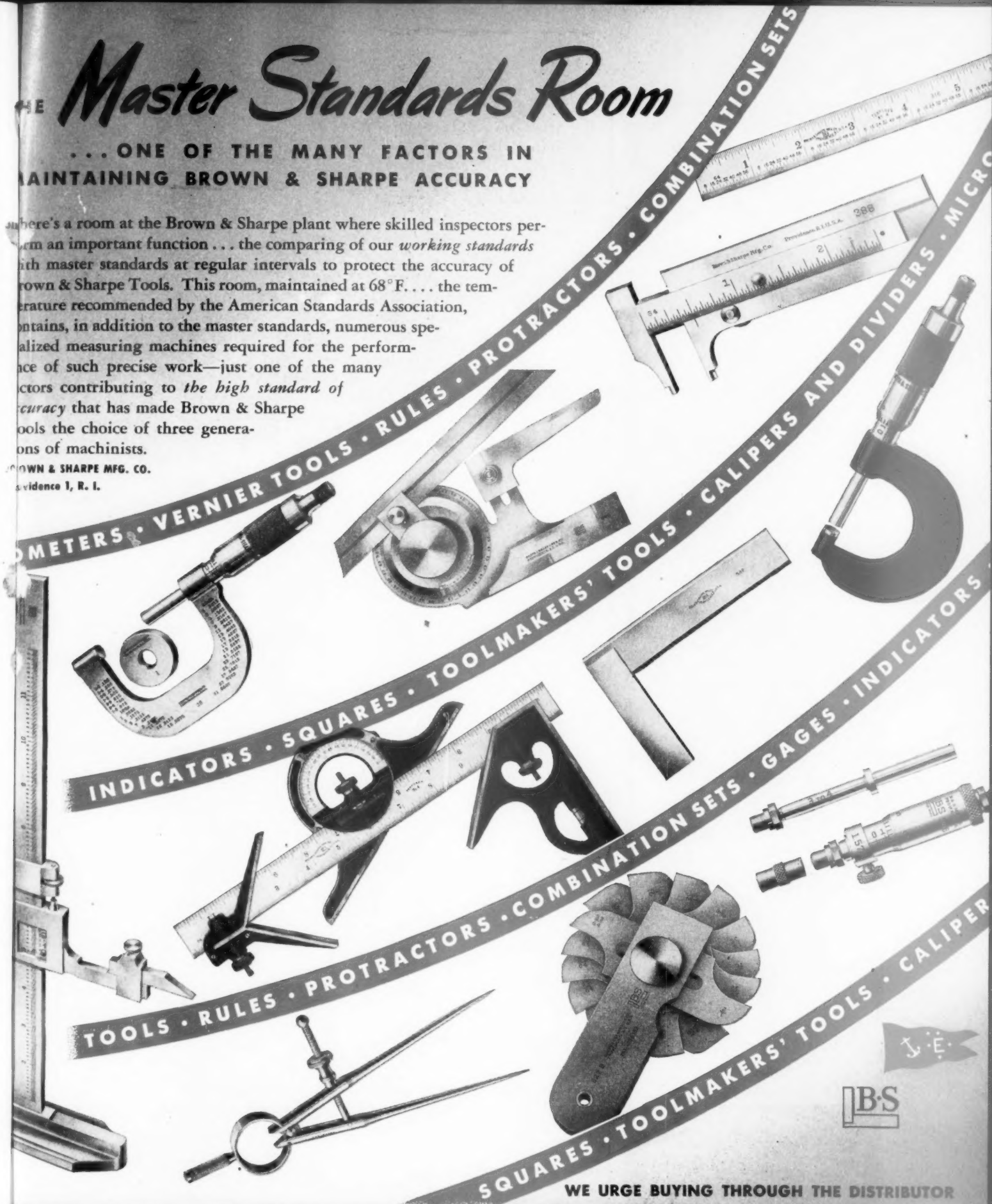
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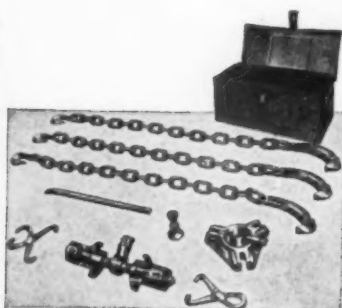
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LEVER
SCREW
HYDRAULIC

(Continued from page 236)

terskamp, Jr., Purchasing Agent, Washington University, presiding officer.

Report of Resolutions Committee.

"The Current Situation in the Disposal of Surplus Property, Henry B. Abbett, Purchasing Agent, Purdue University.

Adjournment. E & I Cooperative Merchandise Exhibit during the convention.

1 1 1

PRESENT ECONOMIC STATUS BUFFALO

Features of the March 13th meeting of the Purchasing Agents Association of Buffalo held at the Hotel Statler, were a discussion of present economic trends by Dr. Martin A. Brumbaugh, University of Buffalo, and a discussion of commodities.

Dr. Brumbaugh expressed the belief that Congress would like to avoid making a decision as to whether price control should be continued or abandoned. In discussing the present situation, he brought to light the following points that in his opinion should be considered when analyzing the present economic status of industry:

1. Manufacturers' prices are not based on purchasing power of public but are determined by competitive costs.
2. Excessive purchasing power expresses itself at retail level.
3. O.P.A. fails to realize prices are set between Purchasing Agent and salesman and not at retail level.
4. Plants will operate only temporarily at a loss.
5. Inflation will originate at manufacturing level and not at retail level which is opposite to O.P.A. thinking.
6. Idle machinery has virtually the same overhead expenses as machinery that is operating.
7. Rationing is a necessary part of any price control program.
8. The labor shortage is about over.
9. The policy of "wage increases and hold prices" is impossible.
10. Purchasing Agents competing for raw materials are largely responsible for increased prices.

In closing, Dr. Brumbaugh expressed the opinion that the country should get as far away from price control as is possible, as soon as possible.

The commodity discussion period was presided over by Walter Wolf, chairman of the commodity committee. Brief reports were made on steel, liner board and boxes, and live stock feeds, by Harry Grow, Bethlehem Steel Co., Rus Unkrick, Hinde & Dauch Paper Co., and Norm Rossow, Cooperative GLF Mills, Inc., respectively.

Chester Bell, chairman of the convention committee stated that the indications are that Buffalo will have a good representation at the National Convention in May.

On March 26th, the educational program marked the completion of a successful year in the work of the educational committee. Ed Noble lead the group in a discussion of "What Sort of Reports, if any, Should the Purchasing

(Continued on page 242)

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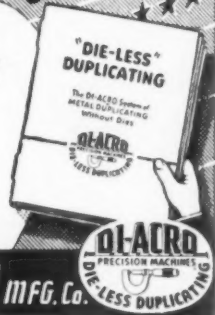
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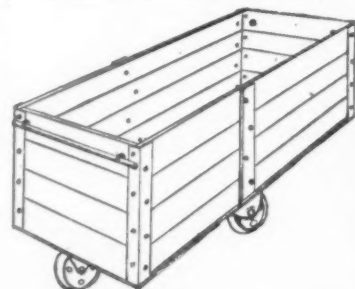
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Furnished Bright or Hi-Carbon Heat Treated, RB&W Cap Screws give your product maximum fastener strength and finest appearance . . . and they are held to close tolerances that just a few short years ago were considered impossible for a commercial product.

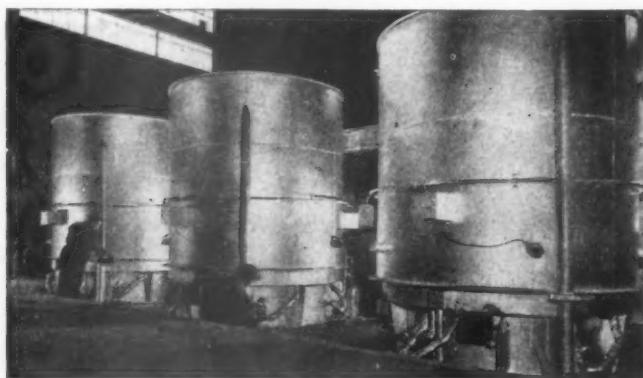
Uniform physical properties are assured by scientific selection and preparation of raw material, use of the latest type of modern equipment and a system of quality control followed throughout production.



COMPLETE RANGE — RB&W Cap Screws are produced in a size range up to 1"x8" and are stocked through 1"x6" in Bright and 3/4" in Hi-Carbon Heat Treated. The Heat Treated screws have a black, satin-lustre finish obtained by a special RB&W process.



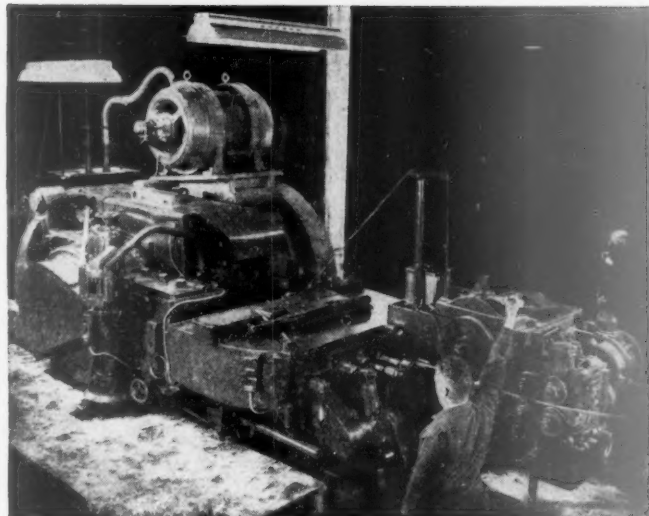
QUALITY CONTROL — Mechanical and physical examination of raw material plus continuous inspection at every stage of manufacture provide assurance of uniformity and top quality.



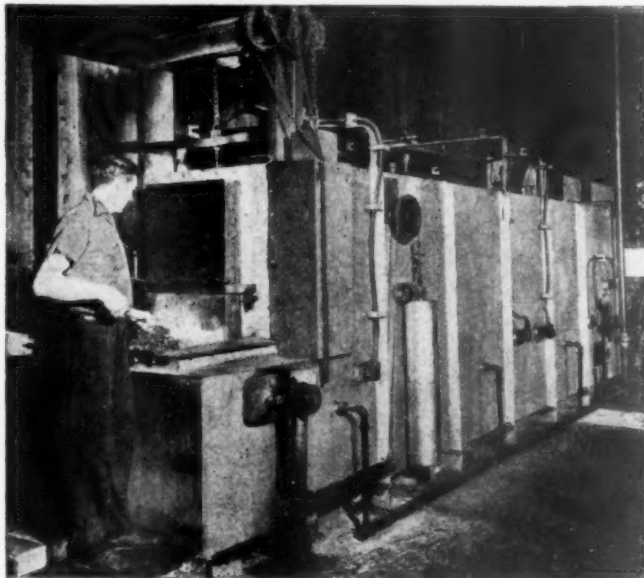
PREPARATION — Hi-carbon and alloy steels are prepared for cold-forming in these spheroidizing furnaces, which improve the micro-structure of the material.



PRODUCTION — Impressive tonnage output daily comes from this battery of machines, representing only a fraction of RB&W Cap Screw manufacturing capacity.



LARGEST MACHINES — These machines have capacity for producing Cap Screws cold up to 1" diameter and offer maximum attainment in close tolerance work.



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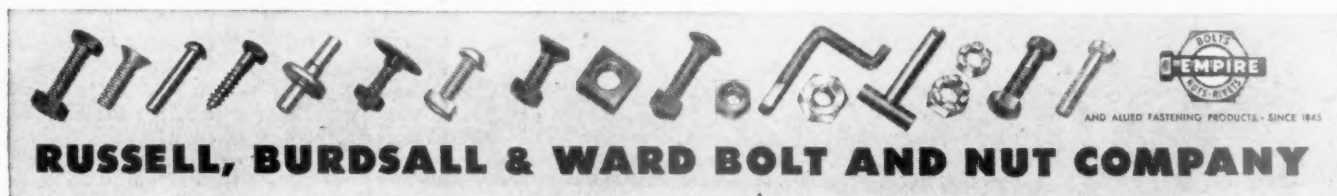


TEMPERING — After oil quenching, RB&W Hi-Carbon screws are tempered in batch type draw furnaces. The final step is the application of the special satin finish which distinguishes this high strength product.

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Plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill. Sales Offices at: Philadelphia, Detroit, Chicago, Chatanooga, Los Angeles, Portland, Seattle. Distributors from coast to coast. Order through your distributor and get prompt service for your normal needs from his stocks. Also, the industry's most complete, easiest-to-use catalog.



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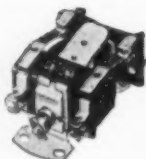


The Bulletin 104 Relay is small, yes . . . but small only in size. It will do a big job for you . . . and right where a larger relay would be hard to get in.

Large wiping contacts that carry heavy loads

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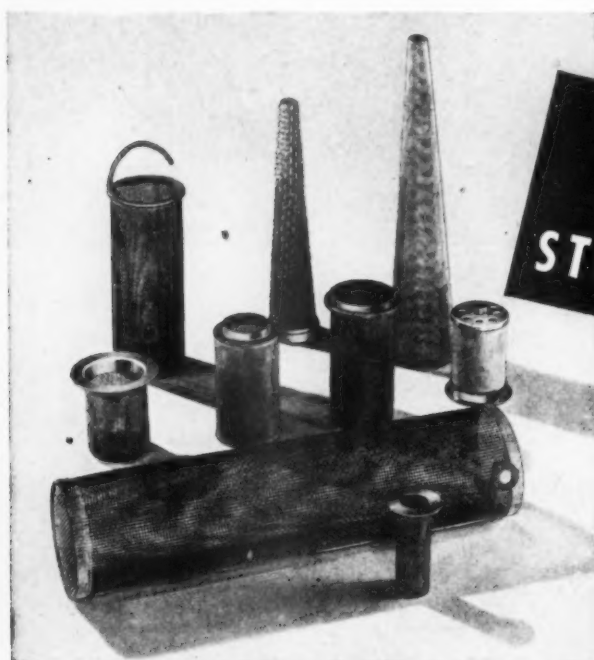
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The C.O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE • SOUTHPORT, CONN.

(Continued from page 238)

Department Make to Management?"

On April 4th a number of the members attended meeting of the Western Pennsylvania Association at Bradford, Pa.

E. S. Goodwin, Westinghouse Electric Corporation, new member, was formally introduced to the meeting.

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A SHIPYARD PURCHASING AGENT'S PROBLEMS

R. S. Page, Purchasing agent for the Federal Shipbuilding & Drydock Co., Kearney, N. J., spoke on "A Shipyard Purchasing Agent's Problems" at the March meeting of the Metropolitan Purchasers' Assistants Club held in Midston House, New York City. Mr. Page stated that in his opinion O.P.A. controls should be very definitely restricted, as supply and demand will equalize market conditions. He stated that under O.P.A. regulations an old established manufacturer cannot obtain a price increase and is forced to discontinue making certain items, whereas a new manufacturer of the same item can sell at a higher price than can an established manufacturer. He recommended among other things, that the purchasing department must closely collaborate with the engineering and production departments, and should make it a point to keep fully informed on new material and equipment developments which might be of benefit to their company. Furthermore, the purchasing department should make it a rule to pass on information about new technological developments to the production and planning departments. Mr. Page especially emphasized that careful attention must be given to inventories at the present, with careful consideration of the factor of safety margin. He also stressed the need for complete and up-to-date purchase records. In conclusion, he stated that purchasing men should give salesmen a fair, courteous hearing.

1 1 1

WARNS OF PRICE INCREASE AT VANCOUVER MEETING

Warning that prices would continue to rise until peacetime production catches up to the backlog of demands, was sounded by George W. Aljian, vice president of District No. 1 of the N. A. P. A., San Francisco, who was guest speaker at dinner meeting of the Purchasing Agents Association of British Columbia at the Hotel Vancouver, Vancouver, B. C., on March 20.

Terming 1946 "the year of confusion," Mr. Aljian urged "caution, caution, and more caution" in the field of purchasing, because of the danger of creeping inflation which will be present for the next two years, with 1946 showing an increase in prices of at least 10 per cent.

Mr. Aljian further stated that "not until competition enters into the business world again can we get back to normal and know where we stand. Until that

(Continued on page 244)

WANTED: Several versatile and capable war-born synthetic gasketing materials with excellent records, want old or new insulating, sealing problems to solve. Call FEL-PRO.

FILLING machines—[2] 8 spout bronze vacuum filler, new. Adjustable 2 oz. to 1 gallon. Bargain.

NO. 00 B. & S. and 178 Cleveland auto. screw machine. Berkshire 2341.



SUPERIOR METALLIC PACKINGS

PATENTED—because they are better. In these folded strands of lead, aluminum or copper foil, depending on the service, are plaited in spiral form. The strands and spirals may or may not contain fibrous cores, also depending on the service, and desired resiliency. These packings handle widest heat range, resist caustics, acids, in exacting applications. Get catalog.

Because years of development were compressed into months during war-time, we now find ourselves with new materials of such wide usefulness that ALL of their applications have not yet been explored and catalogued. Before, we knew exactly what each Fel-Pro product could do, and recommended on that basis. Now, we frequently have new uses for these versatile products suggested by customers, or, they state problems and we find we already have the answers in these new synthetics.

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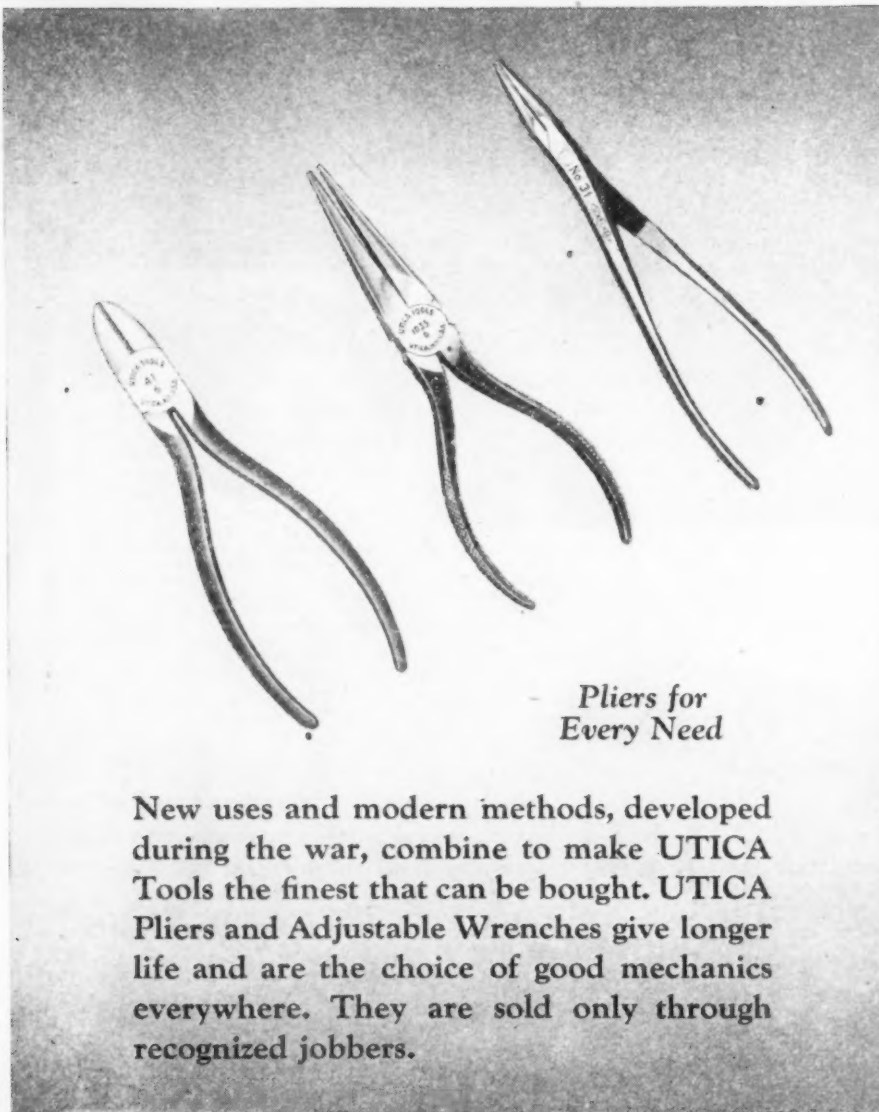
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Gentlemen: Without cost or obligation send me your Free Portfolio of Gasketing and Sealing Materials and details of your No-Charge Consultation Service.

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New uses and modern methods, developed during the war, combine to make UTICA Tools the finest that can be bought. UTICA Pliers and Adjustable Wrenches give longer life and are the choice of good mechanics everywhere. They are sold only through recognized jobbers.



(Continued from page 242)

time it is a dangerous business to forecast the future.

"Higher prices and wages resulting from strikes are a national ring-around-the-rosy. Strikes and the O.P.A. have caused serious delay to the production schedules."

On the prospects for the Pacific Coast, Mr. Aljian voiced a tempered enthusiasm. "There will be a decade of unprecedented prosperity when we can bring our terrific capacity to produce to meet the backlog of civilian needs," he said, "but, production will not meet demands until at least 1948.

"The Pacific Coast has the advantage of climate and living conditions; manufacturers and labor are moving west; wartime "babies" are being weaned to peacetime production and the future is undeniably bright. But not until prices have been stabilized will this be possible—and, frankly, I do not know when that will occur."

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DISCUSS ATOMIC ENERGY USES LOUISVILLE MEETING

A discussion of atomic energy featured the regular monthly dinner meeting of the Purchasing Agents Association of Louisville at the Kentucky Hotel on March 19th. Dr. Donald M. Bennett, Associate Professor of Physics at the University of Louisville, described the fundamental details of atomic energy, stating it was his belief that application to commercial uses is years off with the possible exception of processes requiring great quantities of energy.

Another University of Louisville professor, Charles W. Williams of the Economics Department, gave his regular monthly summary of the economic situation. He expressed the opinion that prices would continue to increase during the balance of the year and that it would be wise for purchasing agents to increase inventories to the maximum permitted by regulations.

Three members recently returned from the armed services were introduced by President A. E. Loeffler, Jr. namely, Frank J. Uehlein of the W. E. Caldwell Co., J. P. Helfrich, Porter Paint Co., and Bob Parrot, Hillerich Bradsby Company.

L. M. Hartman, chairman of the convention committee, announced that arrangements had been made for a special car to take members of the association to the National convention at Chicago in May.

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DISCUSS INVENTORY CONTROL MEMPHIS MEETING

"Control of Industrial Inventory" was the theme of the March meeting of the Purchasing Agents Association of Memphis, at dinner held at the Hotel Gayoso. James Pidgeon, president, briefly reviewed the subject, and introduced the following speakers: Birney Hand, Layne

(Continued on page 246)

DEEP

DOWN UNDER



Hundreds of feet below the earth's surface a miniature railway system is in operation. Powerful electric locomotives, with their strings of coal-laden cars, speed along a main line that may be miles in length. Back toward the working faces are switches, signal lights and many spurs leading to gathering rooms which are supplied by fast-moving, electrically powered shuttlecars.

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There are Exides for every storage battery need. Exide Batteries furnish motive power for the efficient, time-saving electric industrial truck. Exides are used in all fields of communication—telephone, telegraph, radio—in all fields of transportation—railway, marine, aircraft, automotive. They crank Diesel engines, supply emergency light, perform numerous other tasks. And in millions of cars, trucks and buses, they continue to prove that "When it's an Exide, you start."

For 58 years, the name Exide has

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THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32

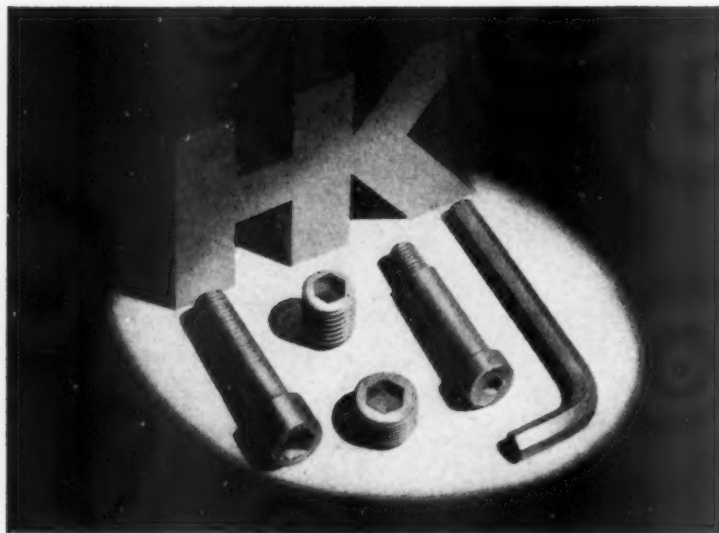
Exide Batteries of Canada, Limited, Toronto

Exide
BATTERIES

H O L O - K R O M E



S O C K E T S C R E W S



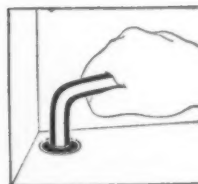
The Better Fastening Method

... and every single Holo-Krome Socket Screw
Product is Guaranteed to give

UNFAILING PERFORMANCE

SOCKET SCREWS
CAP-SET
STRIPPER
BOLTS
PIPE PLUGS
KEYS—KEY SETS

Method owned, controlled and exclusively used by Holo-Krome in the manufacture of H-K FIBRO FORGED Socket Screws.



THE HOLO-KROME SCREW CORP. • HARTFORD 10, CONN.

(Continued from page 244)

& Bowler Co., subjects, "Material Selection in Design and Establishment of Material and Parts for Stock," and "Order Cards and Stock Records"; Martin Sunderland, Memphis Union Station, subjects, "Material Handling and Storage" and "Control and Disposition of Obsolete Inventory;" M. A. Stephenson, Memphis Packing Corp., "Procurement," and "Taking a Physical Inventory."

The meeting was designated as Mississippi-Arkansas-Tennessee night, and its purpose was to encourage purchasing agents in nearby cities to join the Memphis group. Among the out-of-town guests were—Miss Clara Ruble, Arkansas-Missouri Power Co., Blytheville, Ark.; D. A. Tatum, Arkansas Power & Light Co., Pine Bluff, Ark.; Frank Taylor, City Water & Light Plant, Jonesboro, Ark.; R. F. Loidolt, Fairbanks-Morse Co., Stuttgart, Ark., and W. C. Wallace, Southern Supply Co. Jackson, Tenn.

1 1 1

TWO ELECTED TO HONORARY MEMBERSHIP AT ST. LOUIS

Dr. F. W. Russe, formerly of Malinckrodt Chemical Works, and H. J. Albrecht, Moloney Electric Company, were elected to honorary, lifetime membership in the Purchasing Agents Association of St. Louis, at meeting at the Coronado Hotel on April 2nd. Dr. Russe is one of the charter members of the St. Louis association, and Mr. Albrecht has been active in association matters for many years. George A. Renard, Executive Secretary of the N.A.P.A. was guest speaker for the evening.

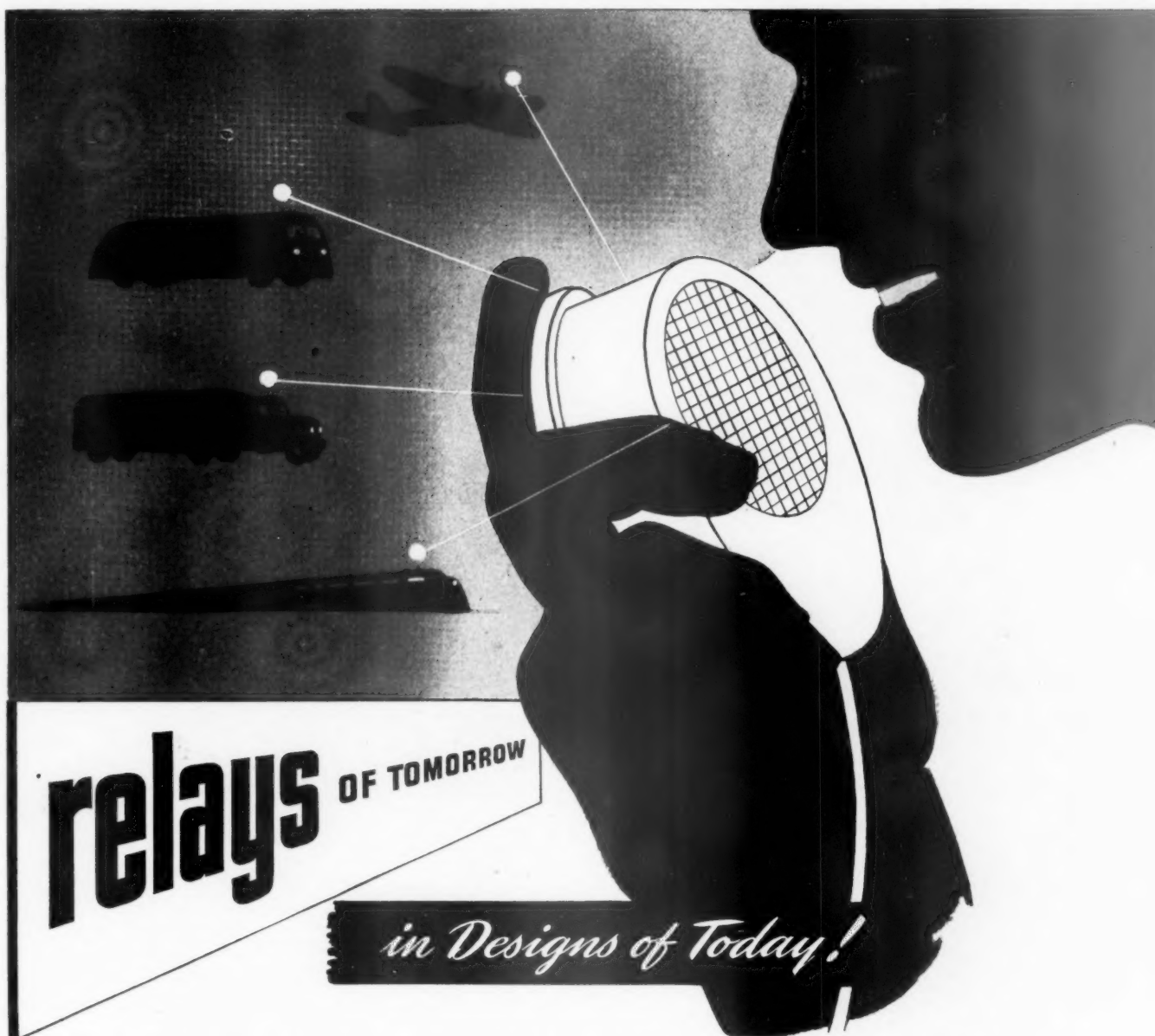
At the association's March 19th meeting, Roy S. Glasgow, Professor of Electrical Engineering, Washington University, spoke on "Some Observations on Germany." Professor Glasgow, a consultant for many radio and utility companies, is one of the foremost radio authorities in the United States. In 1942 he was called to Washington and appointed Radio and Radar Consultant, and at the same time was given charge of all strategic materials for the Signal Corps. In 1945 he headed a group of civilian and army personnel that went to Germany to study German technical developments.

1 1 1

FIBERGLAS REPORTS TO INDUSTRY TULSA MEETING

The Owens-Corning Fiberglas Corporation, in cooperation with Gustin-Bacon Mfg. Co., sponsored the presentation of the subject of Fiberglas by D. W. Curran, of Dallas, Southwest division manager of the Owens-Corning Co., and D. W. Martin, Tulsa representative of the Gustin-Bacon Company, at March 12 meeting of Purchasing Agents Assn. of Tulsa. Talks by these gentlemen were followed by a showing of the sound-slide picture, "Fiberglas Reports to Industry." Special souvenirs of fiberglas XAA-PF type insulating material, which

(Continued on page 250)



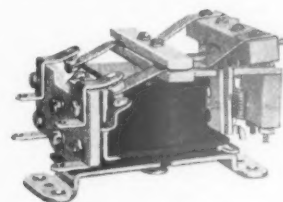
FOR COMMUNICATIONS IN TRAINS • TRUCKS • BUSES • PLANES...

Relays BY GUARDIAN—

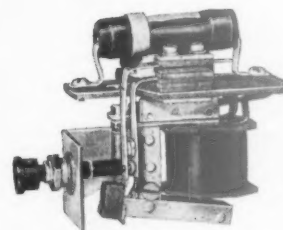
years ahead of today—offer designers of two-way radios definite advancements which contribute to better long-life operation. This is especially evident with Guardian Relays and Switches used in two-way radios for trains, trucks, buses, planes.

For instance, Guardian's series 165-A Relay (A1 Si Mag insulated), for antenna changeover and break-in is small, compact, vibration-resistant. Laboratory tests with 2 normally open contacts prove series 165-A withstands vibration of 16.2 g.+ in both energized and de-energized positions. This is achieved by rugged overall construction and precise counterbalancing of the armature assembly. For H.F. and U.H.F. the series 165-A has a contact capacity to handle all required frequencies. Operates at temperatures ranging -65° to $+160^{\circ}\text{F.}$ and at altitudes from sea level to 50,000 ft. Truly, series 165-A merits a trial now! For V.H.F. antenna switching or keying try the war-tested Vacuum Switch Relay by Guardian.

Let us furnish cost-free information about the complete Guardian line of Radio Relays, also all Telephone Type Relays including the small Midget; and a special Switch used on push-to-talk circuits.

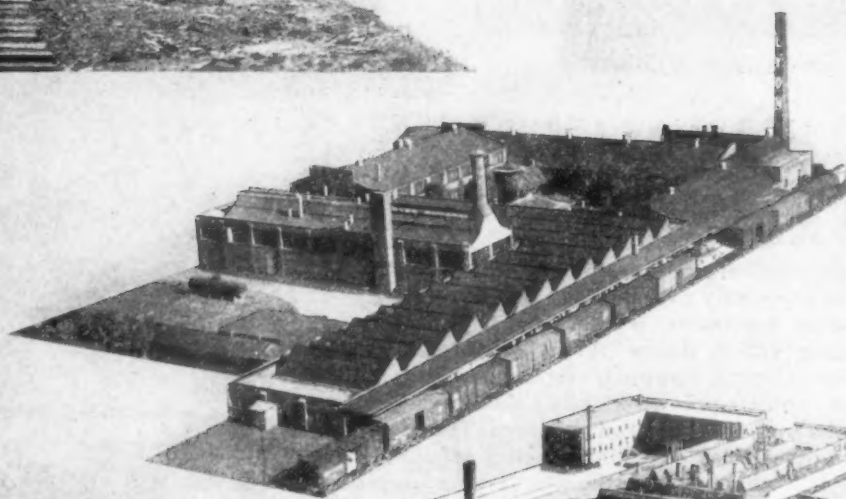


Series 165-A Relay



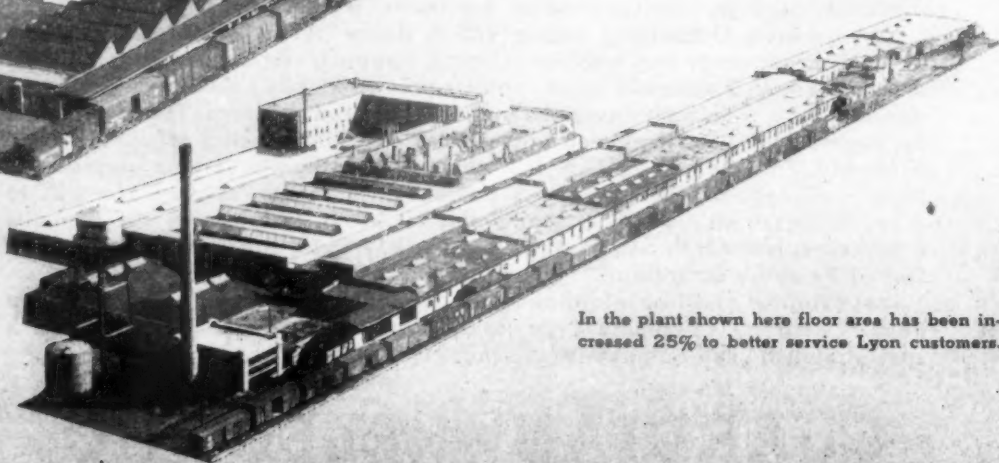
Series X-100 Relay

GUARDIAN  **ELECTRIC**
1635-F W. WALNUT STREET CHICAGO 12, ILLINOIS
A COMPLETE LINE OF RELAYS SERVING AMERICAN INDUSTRY



Partial view of a New Shipping and Stock Room. Total additions at this plant increased floor area over $1\frac{1}{2}$ acres.

New machines, new construction and improvements in plant layout will provide capacity far in excess of wartime production records here.



In the plant shown here floor area has been increased 25% to better service Lyon customers.

YOU MORE and BETTER

LYON

METAL PRODUCTS

Lyon plans for expansion of plant and machinery were ready before V. J. Day to meet the pent-up demand for Lyon Shop and Storage Equipment. Lyon is meeting this situation with a plant expansion program of major construction at all Lyon factories.

These new additions—some completed—others nearing completion—will provide additional modern facilities—for expanded production—and a diversification of new products. Some of these are listed below.

As soon as sufficient raw materials are available to meet the accelerated demands of current lines listed below, other items of major value to American Industry, now in the development stage, will be ready for distribution through Lyon dealers everywhere.

LYON METAL PRODUCTS, INCORPORATED

General Offices: 533 Monroe Avenue, Aurora, Illinois

Branches and Dealers in All Principal Cities

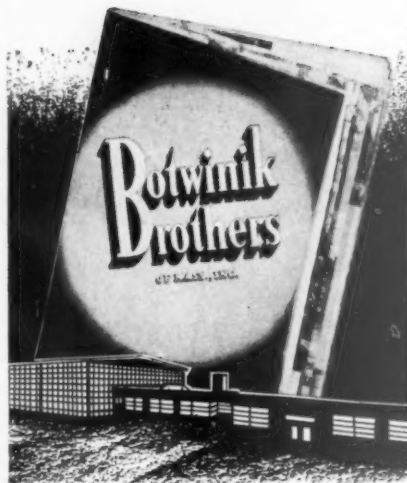
Adjustable Shelving • Tool Storage Units • Lockers and Locker Racks • Bar, Pipe and Rod Units
Work Benches • Gravity Conveyors • Drawing Tables • Tool Stands • Tool Cabinets
Flat Drawer Files • Wardrobes • Storage Cabinets • Filing Cabinets • Stools • Desks
Folding Chairs • Shop Boxes • Bench Legs • Sorting Files • Kitchen Cabinets • Ironing Tables

MACHINE TOOLS REBUILT TO YOUR NEEDS

**CUT COSTS WITH BOTWINIK
SEND FOR OUR CATALOG** →

One of the largest concerns of its kind in the U. S., with complete modern facilities and modern factory expressly designed for the purpose, Botwinik Brothers of Mass., Inc. rebuilds, reconverts, repairs and carries in stock used machine tools of every description for every type of job; also a wide variety of new machines and accessories. You are well repaid when you inquire **FIRST** of Botwinik. Look at these choice, sample reasons.

1 — Red Ring Nat'l. Broach. Machine Co. 8" Gear Shaver, M.D., very lat. type, capac. O.D. 8 3/4", D.P. 5", max. tbl. trav. 12", dist. betw. cens. 18 1/2", AC elect. equip., new in 1942.
1 — B. & S. No. 2 Stan. Vert. Miller, M.D., very



Here are the answers to many of your present production problems—in the 24 pages of our newly published catalog, "Expert Rebuilders of Machine Tools". Send for your free copy now. Use the coupon below.

latest type, tbl. wkg. surf. 51 1/4" x 14", range: long. 28", vert. 14", cross 12", vert. range of hed. 6".
1 — Putnam 84" x 84" x 40' Dbl. Housing Planer, sm. hed. on cross rail.

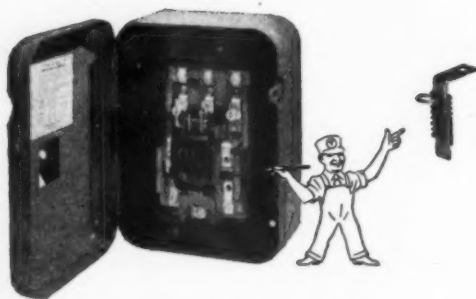
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PLEASE MAIL ME A COPY OF YOUR NEWLY-PUBLISHED CATALOG

NAME

ADDRESS

Look to **TRUMBULL** AS YOUR DEPENDABLE SOURCE OF SUPPLY



Here's the HEATER . . . heart of the starter,
interchangeable from the front

FOR MANUAL STARTERS

To guard against damage to motors, two types of protection are required...

- (1) Short Circuit, usually provided for in the form of branch circuit fuse or circuit breaker . . . and
- (2) Overcurrent protection which disconnects motor from line in event of overload or other condition causing motor to consume more current than its design permits.

Trumbull TM starters . . . old timers with young ideas . . . have served a long, long time under these conditions. Their construction . . . with interchangeable overload heaters accessible from the front makes the difference between fully protected, long, excellent motor service . . . and merely "start" and "stop". Ask for TM (7 1/2 H.P. Max.) or TT (2 H.P. Max.). They have an honorable service record, as they'll prove on the job.

PROTECT what you have . . . old or new, with "TRUMBULLS"

THE TRUMBULL ELECTRIC MFG. CO. • PLAINVILLE, CONN.
OTHER FACTORIES AT NORWOOD, O. — SEATTLE, SAN FRANCISCO, LOS ANGELES

(Continued from page 246)

is very light, were distributed to members and guests.

At the association's March 26th meeting, Dr. L. S. Roehm, assistant manager technical service and development Division, Dow Chemical Co., Midland, Mich., spoke on "Newer Chemical Developments". A motion picture showing the production of magnesium and its various uses was also shown.

TORONTO ASSOCIATION HOLDS MEMBERS NIGHT

The Purchasing Agents Association of Toronto, Ont., recently held a Members Night meeting, at which four association members spoke for twelve minutes each on subjects of their own selection. The speakers and their respective subjects were as follows: Stanley Saunders, General Steel Wares Ltd., "Hot Dip Galvanizing;" D. Guy Hunt, Bauer & Black Division of Kendall Co. (Canada) Ltd., "Cotton—From the plant itself to the Gauze Bandage;" J. H. Crossingham, Acme Carbon & Ribbon Co. Ltd., "Synthesis—or I'll Explain Everything;" and W. J. Warner, A. C. Wickman Ltd., "History and Products of A. C. Wickman Ltd."

At the association's March meeting held at the Royal York Hotel on the 13th, the technicolor film "No Keener Blade" was shown through the courtesy of the Canadian Liquid Air Company. This meeting was dedicated as "Out O'Towners Night" for members who have been faithfully attending association meetings regardless of the distance they have to travel. Special entertainment features were provided.

HONOR PROFESSOR LEWIS AT LOS ANGELES LUNCHEON

A special luncheon meeting was held by the Purchasing Agents Association of Los Angeles, Calif., at the Elks Club, April 2nd, to honor Howard Lewis, Professor of Marketing, Graduate School of Business Administration, Harvard University, and editor of Harvard Business Review. Professor Lewis is the author of "Industrial Purchasing" and a member of the educational committee of the N. A. P. A.

Resuming plant visits, association members had the privilege of visiting the U. S. Naval Shipyard, Terminal Island, on March 28th. The visitors had luncheon in the Yard cafeteria, following which, tour of the Yard was made with members of the Naval Supply Department acting as host.

CATHEDRAL OF AMERICAN ECONOMY — WARREN, PA.

R. R. Underwood, president of the Knox Glass Association, was guest speaker at the March meeting of the Purchasing Agents Association of Northwestern Pennsylvania, which was held at the Car-

(Continued on page 252)



YES, THIS NEW LINE OF U.S.G. gauges is three ways ahead. It's way out in front in appearance, styled by top American designers. It's improved inside to lengthen life yet retain famous U S G accuracy. It's a line of gauges that will make your product look even better and sell faster.

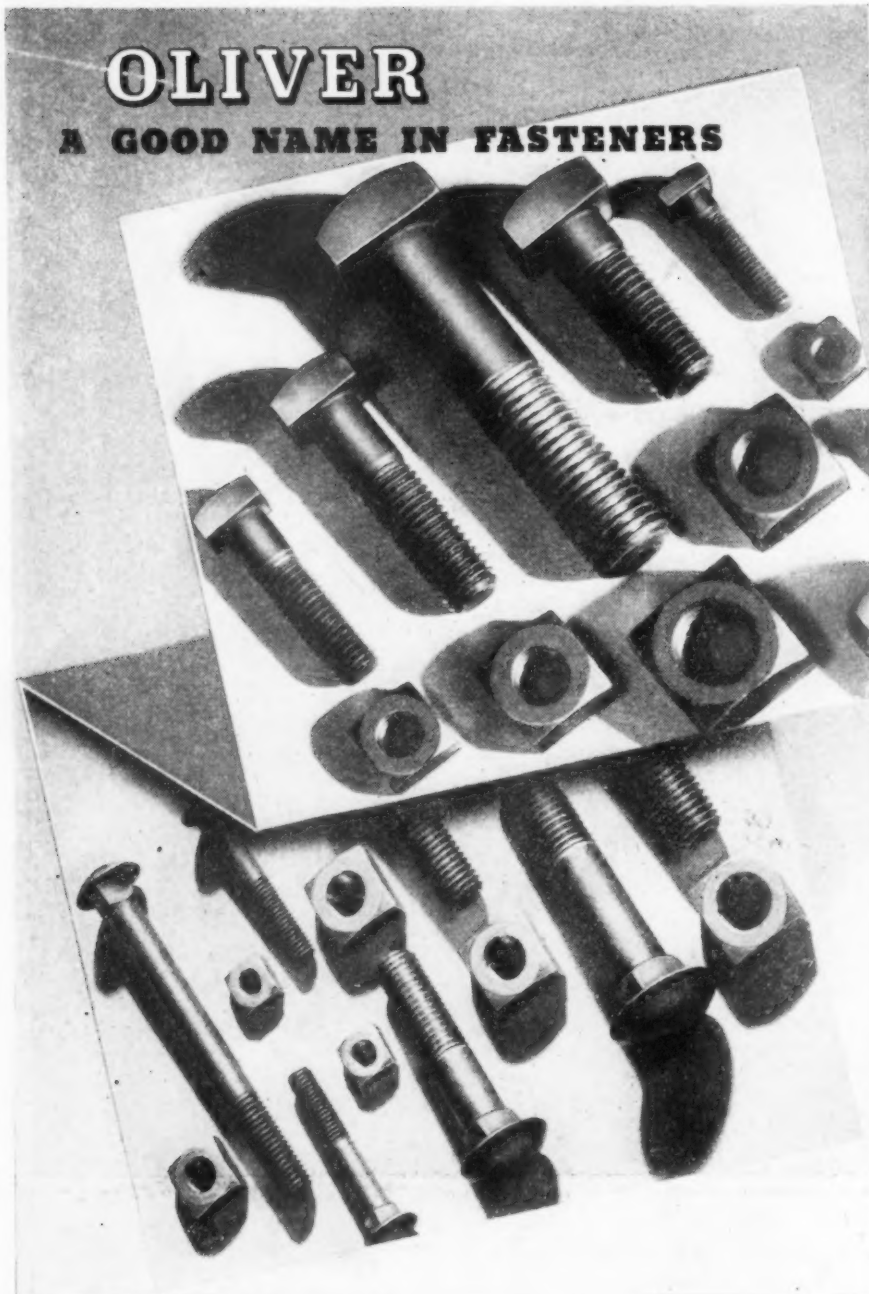
UNITED STATES GAUGE, SELLERSVILLE, PA.



UNITED STATES GAUGE

DIVISION OF AMERICAN MACHINE AND METALS, INC.

Manufacturers of Pressure, Temperature, Flow and Electrical Measuring Instruments



Specify OLIVER Fasteners in the Styles, Sizes and Types You Want

For dependable joints, specify uniform, high quality Oliver Fasteners. Made by one of the oldest and largest firms in the industry, Oliver Bolts, Nuts, Rivets and Screws fulfill your most exacting requirements. We will gladly have our nearest distributor get in touch with you.

OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH AND MURIEL STREETS, PITTSBURGH 3, PA.

(Continued from page 250)

ver Hotel, Warren, Pa. Mr. Underwood spoke on the problems of industry and referred to "This Great Cathedral of American Economy" which we all have helped to establish. This cathedral, he said, is being torn down by sinister forces, and nobody knows what conditions are going to be like at the close of 1946 nor in 1947. Today we are doing business in large volume which involves great responsibilities, he continued, but because of regimentation, the business man of America has stepped aside. We must appraise the situation we are now in, he declared, and bring an end to the tearing down of this Cathedral of American Economy.

A. H. Ewing, purchasing agent for the General Machine Company, Titusville, Pa., a new member, was formally introduced at the meeting. The association is giving consideration to the organization of a purchasing study class.

1 1 1

ROCHESTER INDUSTRIAL BUYERS DISCUSS COPPER ALLOYS

The regular monthly meeting of the Rochester Association of Industrial Buyers, held at the Chamber of Commerce on Wednesday, March 13th, was addressed by Dr. Harry P. Croft, chief metallurgist of Chase Brass & Copper Co., who spoke on the "Choice of the Proper Copper Alloy for the Job." Dr. Croft gave a very interesting talk intermixed with slides showing the effect of alloying aluminum, antimony, lead, and zinc in the base metal. Slides were shown of intricate brass forgings interspersed with photomicrographs of parts showing the grain structure after stress corrosion, de-zincification, and other corrosion factors.

1 1 1

MEETING, DEVOTED ENTIRELY TO COMMODITIES — PROVIDENCE

The March meeting of the Rhode Island Purchasing Agents Association held at the Naragansett Hotel at Providence, R. I. on March 25th, was devoted entirely to commodities, under the direction of Tom Seaver. The following subjects were discussed by representatives of the firms indicated:

Interior Painting, The Colovator Company.

Maintenance Supplies, Pipe Fittings, etc., Grinnell Corporation.

Plastics, Monsanto Chemical Company.

Industrial Lighting, General Electric Company.

There was a question period following each of the talks.

1 1 1

FIREARMS AND ASSOCIATIONS CANTON MEETING

Sixth District Vice President Wm. F. Avery of Cleveland discussed district and national affairs at the meeting of the Purchasing Agents Association of Canton, at the Elks Club, Canton, Ohio, March 12th. Following his talk, the 50 members and guests heard a discussion

(Continued on page 254)

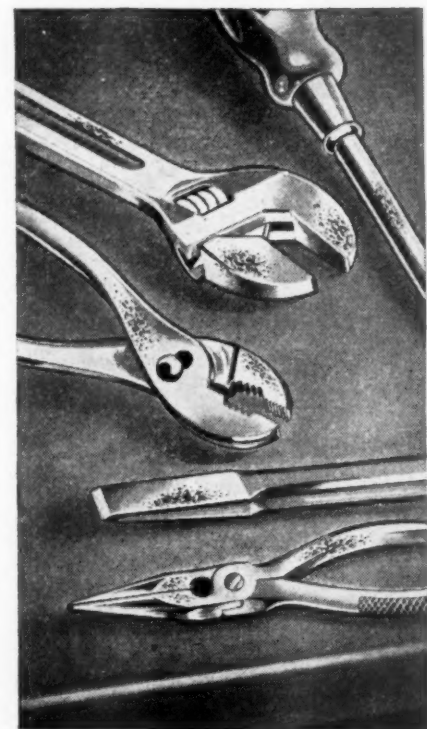
RUST PREVENTION

\$100,000 Worth of Hand Tools saved from "RUST"

NEW PRODUCT DOES THE JOB AFTER PLANT
CONDUCTS EXHAUSTIVE TESTS

"Some time ago, we were called in by a prominent manufacturer.* Corrosion of all metal parts in his entire plant had gone out of control. The machine shop and hand tools, valued in excess of \$100,000, were a sorry looking "dusty-brown." Everything they had used in the way of rust preventives heretofore failed to solve their difficulty.

After studying their problem we recommended our General Purpose



Anti-Corrode No. 100 and suggested that they give it exhaustive tests. Their chemist did so and we are happy to report that it solved their problem.

They have since used over 150 gallons of this Anti-Corrode on everything metal in their plant, including small hand tools such as pliers and screw drivers."

Anti-Corrode No. 100 is one of several new types of Cities Service protective coatings for metals. Designed to prevent corrosion of raw stocks, finished parts and completed ma-

chines, it adheres firmly, displaces moisture and protects longer than similar materials now on the market.

Easy To Apply Apply Anti-Corrode by ordinary work-shop methods. Spray, dip, brush or roll it on. The protective film is continuous and non-porous—does not break at sharp edges nor rupture on flat surfaces. It need not be removed from metal to be stamped, drawn or otherwise formed.



Cities Service will demonstrate the many advantages of Anti-Corrode to you in your own plant. Contact the branch office nearest you or write Cities Service Oil Co., 60 Wall Tower, New York 5, N. Y.

* Name on Request



FOR EVERY
RUST PROBLEM
CALL **Cities Service**
FIRST!

**For Name Plates
Get Our Prices**

Your request for quotations will receive a prompt and courteous response. Whenever the subject of name plates is up be sure to get in touch with us. Inquiry involves no obligation. Perhaps you or your Engineering Department should have one of our "Design for Name Plates" books, showing over 4500 sizes and shapes of name plates for which we have dies in stock. This book will give you valuable help, and save you money on your name plate requirements. Write us—now.

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Metal Name Plates, etched or lithographed • Plastic Name Plates, Dials and Panels, lithographed or screened • Etched Metal Scales, Clock Dials, Instrument Panels, Art Novelties, Advertising Specialties • Etched Metal Panels for elevators and architectural uses.

SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

(Continued from page 252)

on the development of firearms by Terry W. Brown of the East Ohio Gas Co., Canton, who also displayed a part of his renowned collection of firearms which dates back to the 16th century.

1 1 1

ANNUAL SALESMEN'S NIGHT SPRINGFIELD, OHIO

The March 27th meeting of the Springfield (Ohio) Purchasing Agents Association was the Annual Salesmen's Night meeting, with approximately 250 reservations being made. Special guests included Vice President Wm. F. Avery of the National Association, Cleveland, and National Director A. H. Bader, Cincinnati. President R. E. Weadon presided over what was acclaimed to be a very successful meeting—one to be repeated for another year.

1 1 1

"CARBON BLACK TREASURE" SEATTLE, WASH.

The motion picture "Carbon Black Treasure" was shown at the March 14th meeting of the Purchasing Agents Association of Washington at the Washington Athletic Club, Seattle, Wash., by F. M. Lamson, Seattle representative of the National Carbon Company. Principal speaker for the meeting was Dr. George W. Allison, economist of the Puget Sound Power & Light Co., who spoke on "Personal Evaluation."

1 1 1

"MAGNESIUM FROM THE SEA" MUSKEGON

The motion picture, "Magnesium from the Sea" sponsored by the Dow Chemical Company, Midland, Mich., was shown at the March 19th meeting of the Purchasing Agents Association of Muskegon, at the Occidental Hotel, Muskegon, Mich. An interesting discussion of the subject "What Price Loyalty" lead by Raymond Fulton, Norge Machine Products Division of Borg-Warner Corp., featured the meeting.

1 1 1

DISCUSS RAILS FUTURE BOSTON MEETING

Robert M. Edgar, assistant to the president, Boston & Maine Railroad and Maine Central Railroad, spoke on "Future Plans for Railroad Transportation" at the March 12th meeting of the New England Purchasing Agents Association, held at Schraffts in Boston.

1 1 1

OPPOSE OPA CONTROLS FORT WAYNE

The abolishment of Office of Price Administration controls was recommended at the monthly meeting of the Purchasing Agents Association of Fort Wayne, in the Chamber of Commerce, March 18th. It was held that OPA ceil-

(Continued on page 262)

LADISH, Forged Steel Fittings Assure **Reliability**

1
Chamfers accurately machined for thread protection and easy thread engagement.

2
Smooth bored for minimum resistance to flow.

3
Uniform wall thickness achieved by precision machining provides maximum safety factor.

4
Wide reinforcing bands and controlled grain flow provide maximum strength and fatigue resistance.

5
Sharp, clean threads, machined to exacting tolerances of A.N.P.T. Stds., assure pressure-tight joints.

6
Socket-welding types have deep sockets that assure rapid, accurate, self-aligning make-up.

Quality of Ladish Forged Steel Fittings is closely guarded by rigid metallurgical controls at every step in manufacture. Ladish specialized knowledge and skill make available to you Controlled Quality Fittings that assure dependable performance and ultimate economy.

Controlled Quality

FITTINGS DIVISION

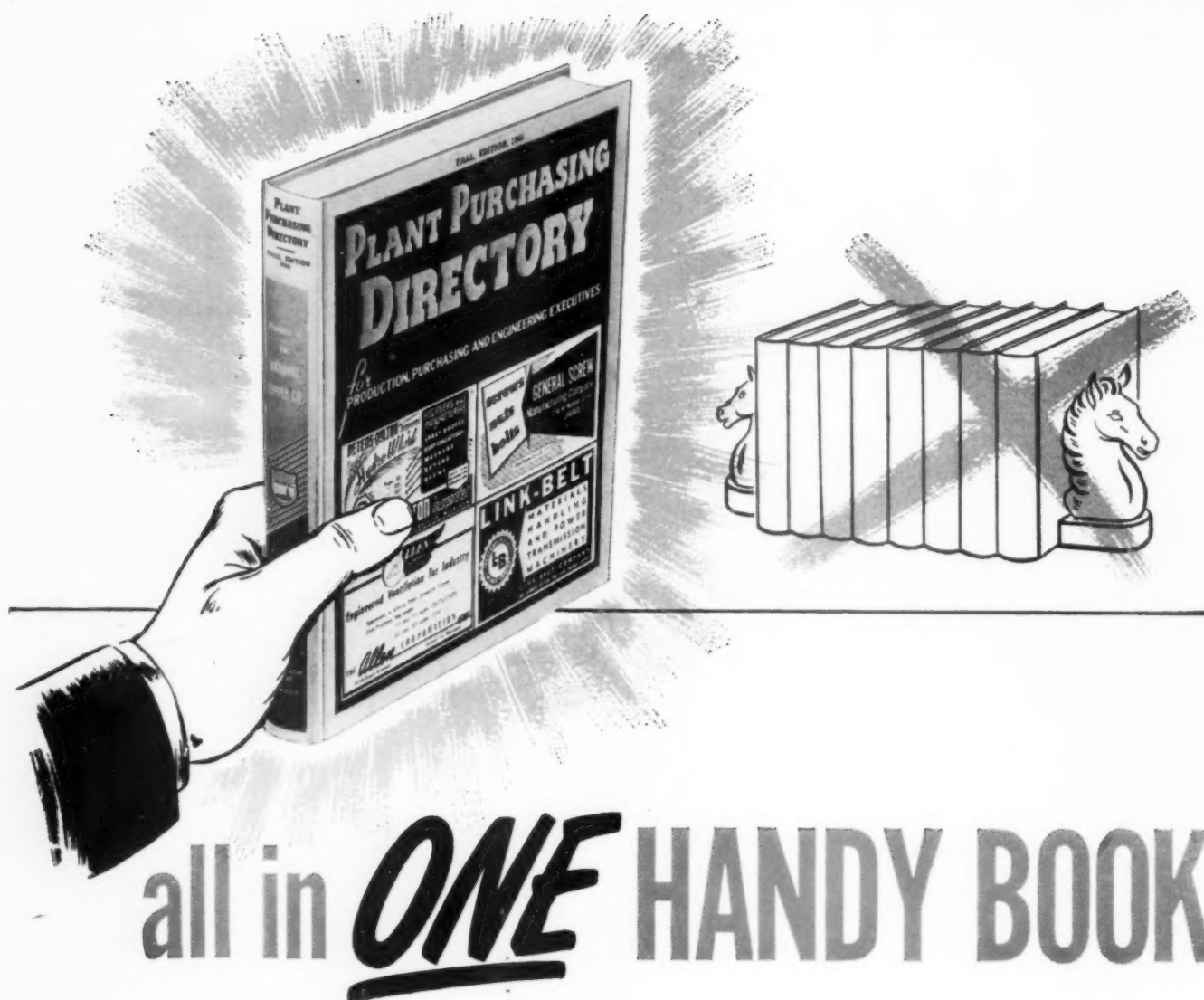
LADISH DROP FORGE CO.

C U D A H Y • W I S C O N S I N (MILWAUKEE SUBURB)

District Offices: NEW YORK • PITTSBURGH • CLEVELAND • ST. LOUIS • HOUSTON • LOS ANGELES



TO MARK PROGRESS



1. A comprehensive source-of-supply Directory for the industrial buyer.
2. Contains five useful sections: Classified—Chemical—Trade Name—Address—Mechanical Data.

All in one convenient seven-pound book that is easily handled. Large 4-column page—lies flat on your desk. Easy to use and easy to keep handy.

A CONOVER-MAST PUBLICATION
(Formerly Plant-Production Directory)

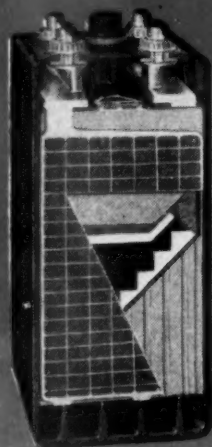
PLANT PURCHASING DIRECTORY

333 No. Michigan Avenue, Chicago 1, Illinois

MEMO

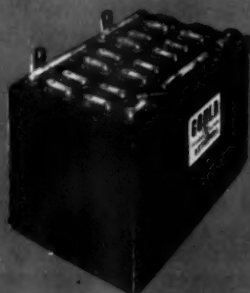
*Why aren't
we using
Kathanode
batteries?*

MATERIALS
HANDLING SUPERVISOR



KATHANODE CELL

This cut-away view shows the many parts in a complete Kathanode cell. Each is the subject of constant research.



GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.

Peterborough, Ontario • Boston • Chicago
Dallas • Depew • Leavenworth • Los Angeles
North Bergen • Rock Island • Saint Paul
Salem • Sioux City
Zanesville

DO YOU KNOW WHY
THE TREND IS TOWARD
Glass Mat Design?

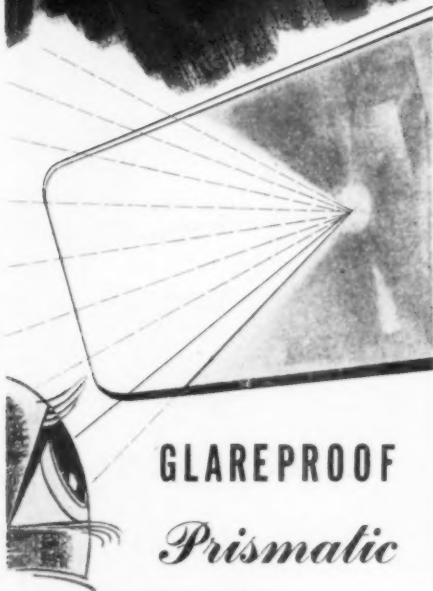
Gould Kathanode power was a startling innovation when introduced to American industry in 1925. Since then the demonstrated superiority of glass mats has resulted in wide-spread use of this form of positive plate protection.

During its 21 years of experience, research and field testing Gould has added many improvements to the original Kathanode design. Incorporated in the now famous Kathanode Unit, and still exclusively Gould, are a specially designed grid, long lasting Black Oxide active material, mats of layered spun-glass, and the Unit-Seal envelop that minimizes short circuits and internal power losses.

Gould research is constant, so look to Gould for leadership in battery developments. Write Dept. 25 for Catalog 100 on Gould Kathanode Glassklad Batteries for Industrial Truck and Tractor Service.



Another Use for Donnelly-Kelley Precision Glass Parts



GLAREPROOF Prismatic MIRROR

• This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.



(Continued from page 224)

ten into bad habits, and the day is soon coming when we will have to correct them. We have grown careless about prices and competition. I hope we will soon be in a new era, and then we must return to the basic principles of purchasing—quality, service and price."

He stated that purchasing agents have emerged from the war experience as better purchasing agents. Commenting on the new technological developments that have come to the fore, he said, "There have been more changes in the sources of supply than I have ever before experienced. Many of us will have to revamp our sources of supply. For instance, today we have the picture of a cereal company making household appliances."

"We as purchasing agents", he said, "are keeping our lights under baskets. No one else can tell management what

to gain a clear picture of our operations by making practical reports to management."

"In some instances management looks



Past President Robert M. Swanton
and President Charles L. Sheldon of
N.A.P.A.

upon the purchasing department as only an expense. We must make management realize that the Purchasing Department makes profits.



Advance class in Industrial Purchasing of the Connecticut Association
is under the guidance of Wm. A. Towle, Jr.

we are doing, unless we tell them. The wrong way to do things is to buy only what we are asked to buy. The right way is to be in a position to make suggestions regarding new products, the improvement of components, or the lessening of production costs, and improved invento-

"Purchasing is now recognized as one of the most important departments of modern business. Therein lies our responsibility and our opportunity."

Preceding the meeting, Wm. A. Towle, Jr., chairman of the course in Industrial Purchasing, presided at the third meeting of the class. The topic under discussion was "How Determine (for purposes of selection, promotion, etc.) the Personal Qualifications of a Purchasing Agent."

1 1 1

800 AT NEW YORK MEETING

(Continued from Page 228)

are entitled to protection but they are not entitled to a blank check. And always keep this fact before you—Many companies made money in the last depression and always will by making profitable sales and purchases."

Among the out of town visitors introduced by President Macintosh were President Charles L. Sheldon of the N.A.P.A., Vice President, Eighth District, A. W. Zackey; Ralph Berry, national director, N.E.P.A.A.; C. O. Richards, president of the P.A.A. of The Lehigh Valley; President W. L. Thompson and Exec. Secretary Harold I. Patten of the Philadelphia Assn.; and Robert L. Cavanaugh, president of the P.A.A. of Buffalo.



Chairman Wm. A. Towle, Jr.,
pounds a question to class in Industrial Purchasing.

ries. The knowledge we learned during the war can serve us well in peace time. The Purchasing Agent is the one who should bring to the attention of other departments, information on new materials and new processes that will keep his company in competitive position. It is difficult to appraise the job of a purchasing agent, but we can help management

SOFT
TOUGH
DUCTILE

Globeiron

SEAMLESS TUBING

INDUSTRY asked for a seamless tubing with high magnetic permeability, uniform ductility, softness, toughness, and corrosion resistant properties. We supplied it in Globeiron Seamless Tubing. Because of its right combination of all these properties, Globeiron is extensively used in the electrical and radio industries; housings for generators and motors are frequently fabricated from Globeiron. It is extensively used for many pressure tubing applications. It can be worked hot or cold.

Some of your tubing problems may be profitably solved through the use of Globeiron Seamless Tubing. Globe engineers, Globe laboratory facilities are at your service. Write for Bulletins 109A and 113.

GLOBE STEEL TUBES CO.
MILWAUKEE 4, WIS., U. S. A.



★ PRESSURE TUBES
★ MECHANICAL TUBING

★ CONDENSER & HEAT EXCHANGER TUBES ★ GLOBEIRON HIGH PURITY IRON SEAMLESS TUBES
★ GLOWELD WELDED STAINLESS STEEL TUBES ★ SEAMLESS STAINLESS STEEL TUBES

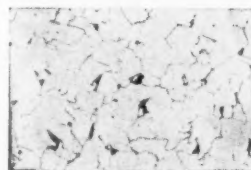


Globeiron is a high purity, low carbon iron, often known as "ingot iron". The physical properties of Globeiron make it ideal for difficult forming operations.

High Magnetic Permeability

(Generator Housing)

Housing for generators and motors may be thinner and lighter when made of Globeiron. The shell of the Dynamotor shown here is an example of Globeiron adaptability.



Under the microscope (mag. 200x Nital Etch) Globeiron shows a uniform structure of almost pure ferrite with only occasional patches of pearlite.



Check with Chase before you spend time shopping around for copper rivets and burs, soldering irons and brass cotter pins. These miscellaneous brass and copper items and many others are carried in stock at many of our Chase warehouses.

✓	COPPER HAMMERS	
✓	BEARING BRONZE, SILICON BRONZE BOLTS	
✓	BRASS NUMBERING CHECKS, WASHERS, BURS	
✓	BRASS AND BRONZE COTTER PINS	
✓	BRONZE SASH CHAIN	
✓	LOCK WASHERS, COPPER SHOT	
✓	BRASS AND BRONZE NUTS AND BOLTS	
✓	BRASS LAG, CAP, MACHINE AND WOOD SCREWS	
✓	COPPER RIVETS AND BURS	
✓	COPPER AND BRASS WIRE CLOTH	
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✓	AUTOMOTIVE, REFRIGERATION AND OIL BURNER FITTINGS	
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✓	CUT, CLOUT AND SHEATHING COPPER NAILS	
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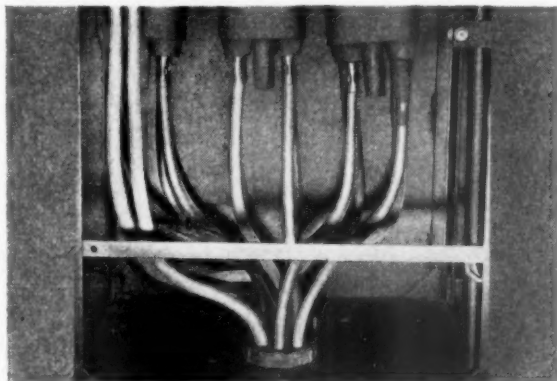
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This is the Chase Network — handiest way to buy brass

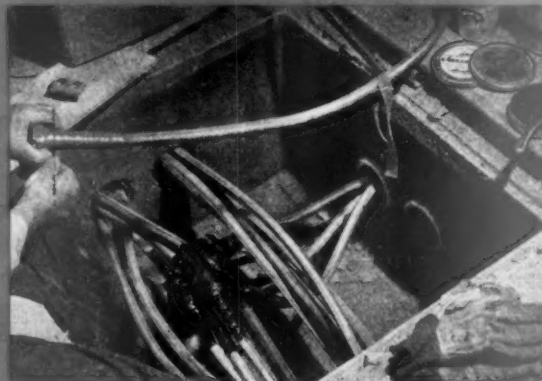
WIRE and CABLE USERS

WROTE OWN "SPECS" for RESEARCH LABORATORY

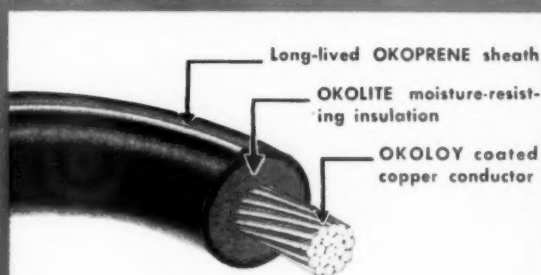


Connections for one of three 208-volt ring mains in cellar of laboratory at low side of 4150 volt distribution transformer. The 4/0 Okolite-Okoprene cables are colored blue, red and black for phase identification.

Before equipping their new and completely modern laboratory, the engineers of a world-famous research organization decided to write their own specifications. Drawing on the extensive experience and test results of their own, they called for wires and cables insulated with an oil-base compound protected by a sheath of neoprene. *They knew what they wanted:*—wiring that would resist flame, moisture, heat and chemicals. *They GOT what they wanted:*—Okolite-Okoprene* cables shown in pictures below. The job is described in Bulletin OK2035, the cable in Bulletin OK2009-C both available on request. The Okonite Company, Passaic, N. J.



Taps being made in 3' x 3' distribution manhole. Exposed section of conductor and connector insulated with Okonite splicing materials. Okolite-Okoprene cables were specified for tough, damp locations.



OKOLITE-OKOPRENE cables offer such additional advantages as:— no braids to rot . . . simple, flexible, long-lived construction . . . tough weather-resistant jacket of uniform thickness requiring no other covering . . . high surface resistance that eliminates surface discharge . . . 75°C operation.



OKONITE RUBBER TAPE AND MANSON FRICTION TAPE offer a combination known the world over for dependable protection and high quality in jointing and splicing operations. Okolite High Voltage Corona-Resisting Tape and Okonite Cement help round out a complete line of tapes and splicing materials. For additional data, write for Bulletin 1007.

*U. S. Pat. No. 2,312,058

OKONITE



insulated wires and cables

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HY-PRO TAPS

For High Production

HY-PRO precision taps produce consistently more threaded pieces to lower your tapping costs. Their extra hardness and durability result in longer life, greater accuracy, more wear between sharpenings.

Send for catalog on company letterhead

Send in your Tapping Problems. Our Engineering Staff will give them careful study and recommend the best solution.



HY-PRO TOOL CO.

New Bedford, Massachusetts, U. S. A.

This is TRI-LOK OPEN STEEL FLOORING



OPENINGS SMALL ENOUGH TO PREVENT PASSAGE OF BOLTS OR NUTS WITH A 1/2" DIA.

MAXIMUM OPENINGS DUE TO THIN BARS ALLOW UNINTERRUPTED PASSAGE OF LIGHT AND VENTILATION

Extra strong construction—openings closely spaced—available in rectangular, diagonal and U shapes—with Safety Steps. Ask for Bulletin 1140.

DRAVO CORPORATION, NATIONAL DEPARTMENT
300 PENN AVENUE, PITTSBURGH 22, PA.
(Distributor for THE TRI-LOK COMPANY)



(Continued from page 254)

ings have retarded reconversion and production, and that raw materials were being diverted to lines which are more profitable instead of those for which there is greatest demand.

1 1 1

THE NEW OFFICERS OF CENTRAL MICHIGAN ASSOCIATION

Following are the new officers of the Purchasing Agents Association of Central Michigan for the current association year:

President, Nelson J. Gibbins, Motor Wheel Corp., Lansing, Mich.

1st Vice-President, Frank W. Huxtable, Reo Motors, Inc., Lansing.

2nd Vice-President, Harry E. Zuck, Renown Stove Co., Owosso, Mich.

Treasurer, Harold V. Minnie, Young Bros. & Daley, Inc., Lansing.

Secretary, G. Boyd Vass, Hayes Industries, Inc., Jackson, Mich.

National Director, J. Stanley Bien, State Purchasing Division, Lansing.

1 1 1

WHAT'S GOING ON IN WASHINGTON — BIRMINGHAM

Thornton Estes, president of the Estes Lumber Company, and member of the Lumber Advisory Board, spoke on "Man to Man, What's Going on in Washington" at the March 27th meeting of the Purchasing Agents Association of Alabama, at the Thomas Jefferson Hotel.

1 1 1

BUYER LOOKS AT BUSINESS WILMINGTON

Editor Stuart F. Heinritz of Purchasing Magazine was guest speaker at the March 25th meeting of the Industrial Purchasing Agents of Wilmington, Del., at the Hotel DuPont, Wilmington. His subject was "The Buyer Looks at Business."

1 1 1

STATE ECONOMIC GEOGRAPHY SYRACUSE MEETING

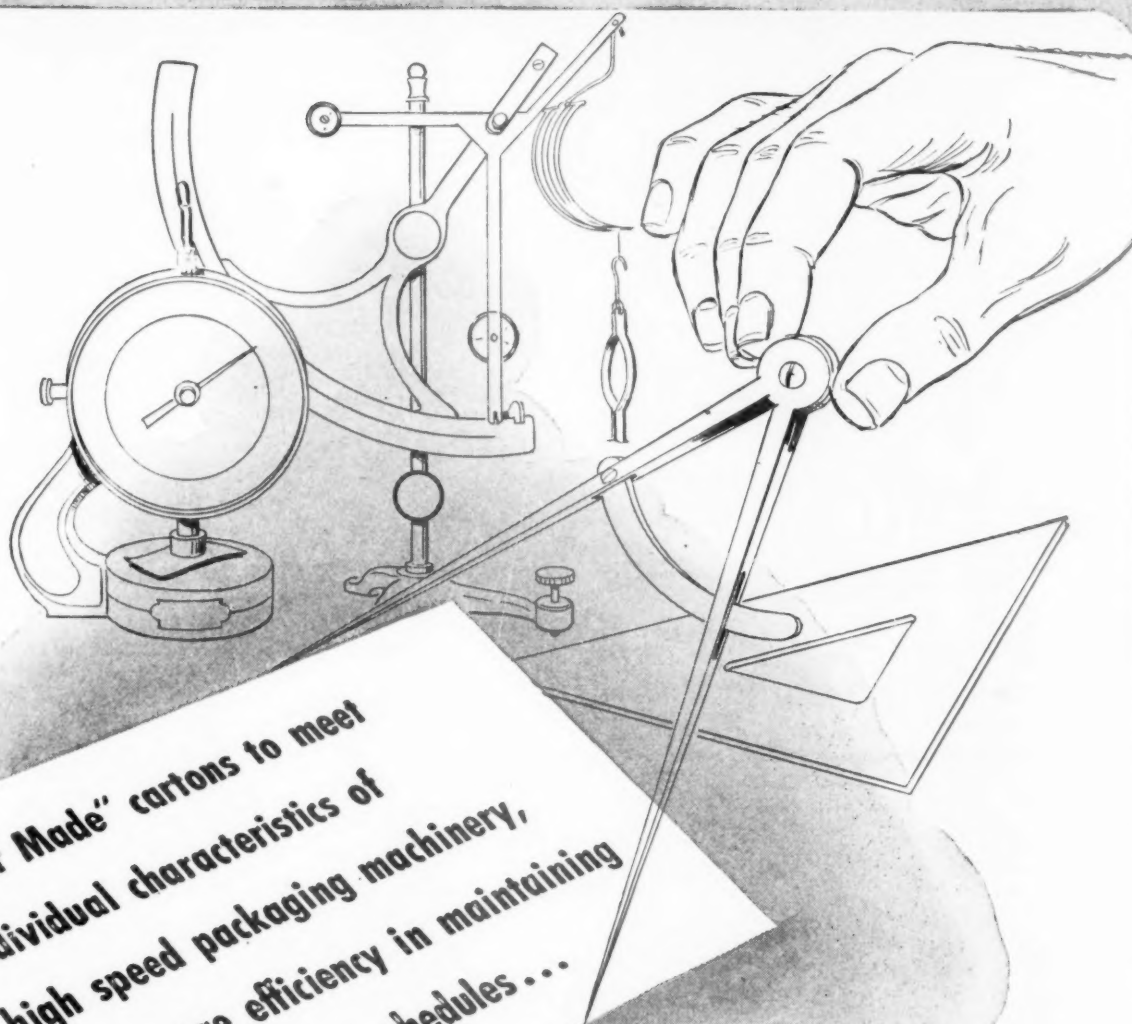
"Some Aspects of the Economic Geography of New York State" was the subject of interesting address by Professor Eric Faigle of Syracuse University, at the March 27th meeting of the Purchasing Agents Association of Syracuse, held at the Onondaga Hotel.

1 1 1

LOWELL SMITH HEADS CALIF. GOVERNMENTAL BUYERS

Lowell R. Smith, deputy purchasing agent, State of California, was elected president of the California State, County & Municipal Purchasing Agents Association, succeeding Charles C. Harvey, at the association's annual conference held in Pasadena. Other officers elected are: First vice president, James M. McCool, assistant purchasing agent, Los Angeles County; second vice president, William

(Continued on page 264)



*"Tailor Made" cartons to meet
individual characteristics of
high speed packaging machinery,
bring more efficiency in maintaining
vital production schedules...*

... says ROBERT GAIR

Each type of high speed packaging machinery has a "personality" of its own... a characteristic that demands the uniform precision of a "tailor made" carton... just the kind of distinctive "tailor made" cartons that embody the experience, the "know how" and the infinite care of the Robert Gair organization.

Our technical staff is at your service when you contemplate an improvement in your packaging facilities or when you plan the ideal carton for your new product.

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ROBERT GAIR COMPANY, INC. • NEW YORK • TORONTO
Paperboard • Folding Cartons • Shipping Containers



Hussey Copper on your new products has everything in its favor—eye appeal, quality, durability, dependability—a thoroughly practical, inexpensive material that is easily formed, drawn or shaped in almost any shape. Let Hussey engineers show you the many practical reasons why Hussey Copper will make your products more saleable.

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(Continued from page 262)

J. Robbins, acting purchasing agent, City of Sacramento. The secretary of the association is Verne O. Gehringer, Purchasing Agent, San Diego County, San Diego, Calif.

1 1 1

HOW STEEL IS MADE CHICAGO WOMEN'S DIVISION

"How Steel is Made," a film produced for the Bethlehem Steel Co., was shown at the April 11th meeting of the Women's Division of the Purchasing Agents Association of Chicago, in the Merchandise Mart. The showing of the picture was followed by a general discussion of steel and the steel situation.

1 1 1

RADAR — AND THE WAR ROCHESTER

Dr. Lee A. Dubridge of the University of Rochester, who headed a Radiation Laboratory project at the Massachusetts Institute of Technology which was the spearhead of America's radar development, spoke on "Radar—And the War" at the March 27th meeting of the Purchasing Agents Association of Rochester, at the Sheraton Hotel, Rochester. The project personnel totalled 3900, and the monthly budget was \$4,000,000.

1 1 1

INTERNATIONAL TRADE NEW ORLEANS

"International Trade Mart" was the subject of talk by Clay L. Shaw, sales manager, International Trade Mart, at the April 8th meeting of the Purchasing Agents Association of New Orleans, held in the Jung Hotel, New Orleans.

1 1 1

PURCHASING COURSE RHODE ISLAND

Program for April 22nd dinner-meeting of the Rhode Island Purchasing Agents' Association, held in the Narragansett Hotel, was furnished by members taking post-graduate course in industrial purchasing. Lead by Francis G. Martineau of Brown University and guest consultant Wyman S. Randall, Rust Craft Publishers, Boston, subjects discussed were "How measure the efficiency of a purchasing department," and "What sort of reports, if any, should purchasing department make to management."

1 1 1

STORY OF PAPER FORT WORTH, TEXAS

The motion picture "Paper from the Forest to the Counter" was shown at the Purchasing Agents Association of Fort Worth, Tex., April 16th meeting in the Worth Hotel before an audience of 100% of the association's membership. Forrest Byrd, Purchasing Agent for Carpenter Paper Co., supervised showing the film which was supplied by Hammermill Paper Co.

**Your quantity-run
Special Threaded Parts
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and more economically by**

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Kaufman Double Extrusion Process**

Many of your specially designed headed and threaded parts can be produced by the upset method, or cold forging, with all-around advantages. Our application of this method, which involves single or double extrusion according to the design, assures you a stronger part, produced faster and at an appreciable saving when ordered in production quantities. Send your drawings and specifications. We'll tell you frankly whether we can help you with Kaufman Process manufacturing.

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MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

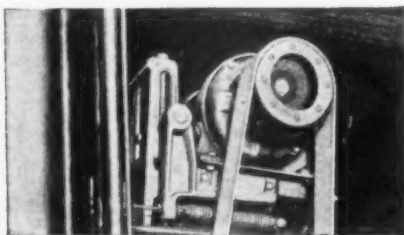


 Cotton travels a long way from the boll to the finished shirt. Yet shutdowns were slowing production in a Carolina mill, just when the country needed it most. The Fan Belt Drive on the Cotton Combs are natural trouble-makers. The short centers — little take-up — the oil, dirt and heat are conditions which stretch, torture and kill a belt's performance. And when adjustments are necessary — production stops.

Schieren was called in, studied the problem and produced a grip to cure the gripe. A 1½" DUXBAK Single Ply Belt was installed — and outperforms any belt tried before. It is giving top-performance and will do so for years to come. The DUXBAK super-grip covers more pulley-surface . . . permits normal operating slack — adding to belt life and lowering maintenance costs. There's no stretch to cause shutdowns and machines operate at top speed 16 hours a day, 5 to 6 days a week!

Cotton Combs need not be YOUR power transmission problem, but no matter what your requirements are — the custom-built performance that is standard with SCHIEREN LEATHER BELTS will deliver maximum speed — extra RPM. They thrive on trouble — cost no more than other belts — and soon pay for themselves by minimizing maintenance and costly shutdowns.

The 76 years of experience behind CHAS. A. SCHIEREN & CO.'s manufacturing of super-quality belts is at your service. You will find it to your advantage to let us quote on your belting, strapping or packaging requirements. Just drop us a line.



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• 60 Front Street, W. Toronto, Ont.

GEORGE RENARD GUEST OF PITTSBURGH ASSN.

Executive Secretary George A. Renard of the N. A. P. A. was guest speaker at the March 19th meeting of the Purchasing Agents Association of Pittsburgh, at the Hotel William Penn, giving one of his straight-from-the shoulder talks under the subject "From One P. A. to Another."

1 1 1

MANAGEMENT-PURCHASING-SALES CHICAGO MEETING

"Management-Purchasing-Sales" was the theme of a round table discussion at the April monthly meeting of the Purchasing Agents Association of Chicago, at the Hotel Sherman on the 11th. Leader of the group and talking for Management was William H. Spencer, Dean of the School of Business, University of Chicago. Eugene S. Page, purchasing agent, Great Lakes Carbon Corporation, represented Purchasing, and Edward J. Burnell, vice president in charge of sales of the Link-Belt Company, discussed the position of Sales.

1 1 1

WINNING A PEACE MONTREAL MEETING

Major-General A. E. Walford was guest speaker at the April 16th meeting of the Purchasing Agents Association of Montreal at the Mount Royal Hotel, his subject being "Fighting a War and Winning a Peace."

1 1 1

ANNUAL EXECUTIVES NIGHT LOS ANGELES

Lewis Allen Weiss, vice president of the Los Angeles Chamber of Commerce, vice-chairman of the board, Mutual Broadcasting System, spoke on "The Missing Ingredient" at the Annual Executives' and Past Presidents' Night meeting of the Purchasing Agents Association of Los Angeles, at the Los Angeles Elks Club, April 11.

1 1 1

SURPLUS GOODS DISPOSAL SEATTLE MEETING

O. C. Bradeen, Regional Director, War Assets Administration, spoke on "Surplus Goods Disposal Under Merged Set-up of Consumer and Producer Goods Divisions," and Frank N. Ward, U. S. Treasury Department representative, spoke on U. S. Savings Bonds, at the April 11th meeting of the Purchasing Agents Association of Washington, at the Washington Athletic Club, Seattle. An extra feature of the meeting was the showing of colored movies of the St. Mary's-Oklahoma Aggies Sugar Bowl football game, through the courtesy of Royal Brougham and the *Seattle Post-Intelligencer*.

An educational forum preceded the dinner meeting, "What Price Loyalty" being the selected case under consideration. The case was briefed by Harold

(Continued on page 270)

MR. HIGBY LEARNED ABOUT FLOOR SAFETY

... *THE*
HARD
WAY!



This is a true story. In the office of a very large industrial concern, the girls had long complained about the slippery floor conditions. In fact, there had been several more or less serious accidents. But it was not until the president himself lost his balance and his dignity that steps were taken to correct this serious hazard to the safety and efficiency of employees. The president's *personal* investigation disclosed some startling facts.

His findings are reported in our little book "Mr. Higby learned about Floor Safety the *Hard Way*." It tells why the elimination of slip hazards *often requires action by top management officials*. Then the book goes on to show how the LEGGE System makes walk-ways safe . . . and at the same time improves floor appearance while actually *reducing* maintenance costs. *You* will be interested in reading this book. Sign and mail the coupon for your copy . . . *today!*

**LEGGE
SYSTEM**
OF Non-slip
FLOOR MAINTENANCE

PIN TO YOUR LETTERHEAD
and mail for complete information

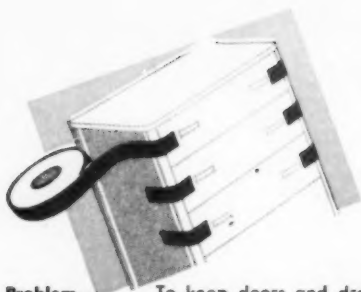
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Gentlemen: Please send your free book,
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Attention of _____ Title _____

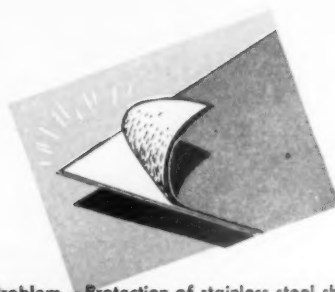
P-5

For fast corrective action, dictate a note to us stating approximate area and types of flooring. Describe briefly maintenance methods now employed and add particulars about any specific slip hazards encountered on your premises.



Problem—To keep doors and drawers closed during shipment and handling for protection against damage.

Solution—Self-Stik Mystik Tape applies quickly without moistening, holds surely, peels off easily.



Problem—Protection of stainless steel sheets during fabrication processes to prevent scratching, marring, oil marks, etc.

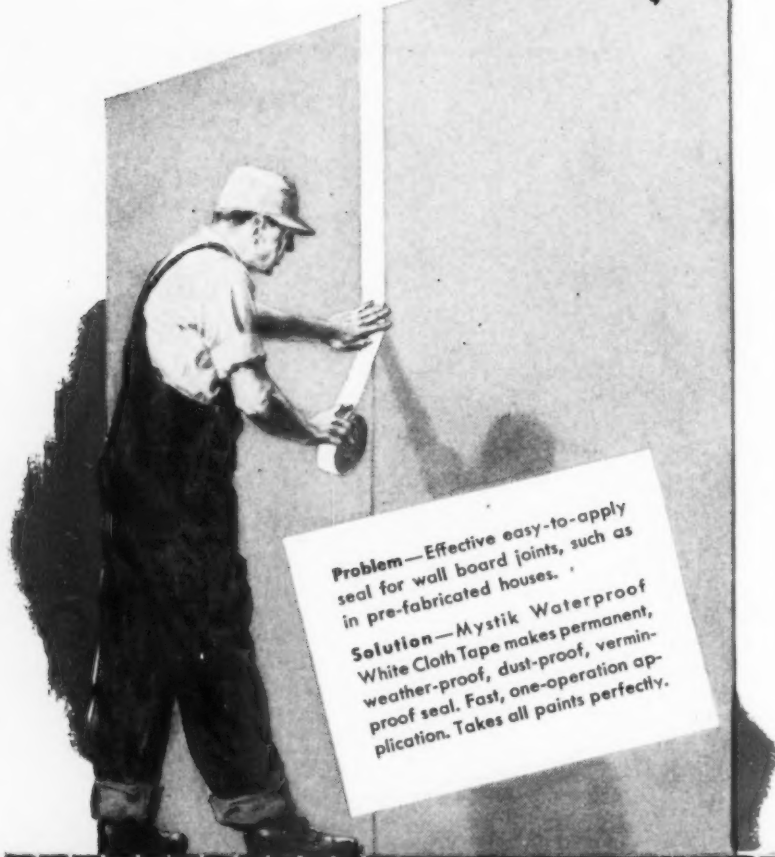
Solution—Mystik Mask supplies tough, resilient "skin" for polished surfaces. Very easy application. Removes quickly in one piece. Can be removed and re-applied for welding.



Problem—To quickly spray-paint designs, insignia, etc. on products. Eliminate costly hand-lettering and imperfect stenciling.

Solution—Mystik Spray-Mask sticks to surface, permitting clean-cut designs and one-man operation. Spray-Mask delivered die-cut as needed. Cuts costs.

Methods *by Mystik*



Problem—Effective easy-to-apply seal for wall board joints, such as in pre-fabricated houses.

Solution—Mystik Waterproof White Cloth Tape makes permanent, weather-proof, dust-proof, vermin-proof seal. Fast, one-operation application. Takes all paints perfectly.

• When you're looking for faster, cost-cutting, labor-saving methods . . . think of Mystik. Mystik isn't just a tool or a material . . . it's an open door to better methods for doing hundreds of operations in your plant.

Mystik comes in many forms—MYSTIK SELF-STIK TAPE, cloth or paper, up to 36" wide—MYSTIK MASK, a reinforced paper material for protecting fine surfaces—MYSTIK SPRAY-MASK, a fast method for stencil spray-painting designs and insignia—MYSTIK DRI-PIPE, an insulation to stop pipe drip—MYSTIK PRINT for Self-Stik labels and signs.

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FREE—Send for Mystik samples and interesting new booklet showing how *Methods by Mystik* can cut costs in your plant. Mail coupon to—Mystik Adhesive Products, 2634 N. Kildare, Chicago 39.

Mystik Adhesive Products, 2634 N. Kildare, Chicago 39.

SEND **FREE** BOOKLET AND FOLLOWING SAMPLES:

- ☐ Mystik Cloth Tape; ☐ Mystik Waterproof Cloth Tape;
☐ Mystik Mask; ☐ Mystik Spray-Mask; ☐ Mystik-Mask Paper Tape;
☐ Mystik Dri-Pipe; ☐ Mystik-Print.

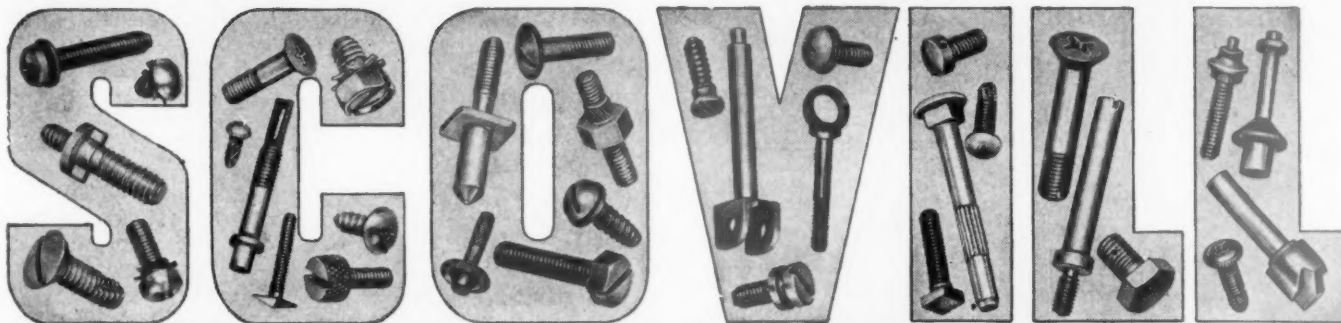
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Company _____

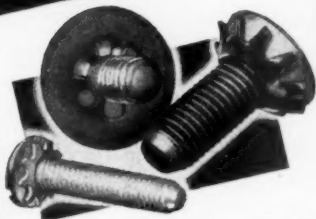
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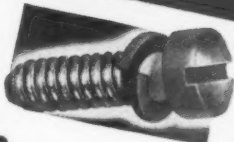
"ANYTHING THAT STICKS"



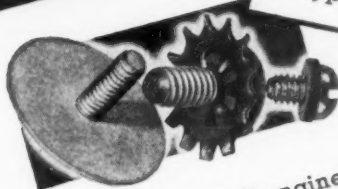
SCOVILL WASHER ASSEMBLED SCREWS MEAN SAVINGS FOR YOU



1 Standard "Sems" type internal or external multi-toothed washers.



2 Standard split type lock washers.



3 Special SCOVILL engineered adaptations of multi-toothed washers, and variations of fibre or metal, plain or spring, standard washers. Here SCOVILL ingenuity enables you to fit the right type of fastening to the exact requirements of your job.

These basic types of SCOVILL preassembled washers and screws will cut your production costs by meeting your fastenings requirements with faster and better work on any job where washers are used. Illustrated above are a few of the many screw head styles and screw and washer sizes.

These and every other type of SCOVILL washer assembled screws have three important advantages for you.

- 1** The washer is permanently fastened...yet free to rotate. No dropped or lost washers. No chance of the wrong washer on the right screw.
- 2** The extra cost of hand assembly on the job—plus the usually slower driving time of the hand assembled screw—are eliminated.
- 3** Ordering and stock control are simplified...inventories balanced.

Washer assembled screws are another of the many fastenings products with which SCOVILL can lower your fastenings costs. Talk over your needs with any one of the offices below.

SCOVILL MANUFACTURING COMPANY

WATERVILLE SCREW PRODUCTS DIVISION

WATERVILLE 48, CONN.



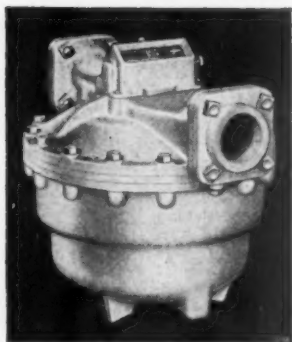
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NEW YORK, Chrysler Building • DETROIT, 6460 Kercheval Avenue • CHICAGO, 135 South LaSalle Street • PITTSBURGH, 2882 W. Liberty Ave.
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... for metering, filtering, distilling, pumping,
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METERS.....

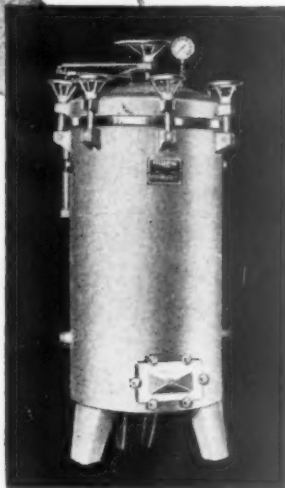
The Bowser Xacto... long known as "the world's most widely used meter" ... is a positive displacement meter of extreme accuracy for recording of liquid transfer operations.

It is made in many standard types and for special applications. In accuracy Xacto Meters exceed all Federal and State requirements.

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FILTERS.....

The Bowser line of filters covers standard applications in a large group of industries. Monel screen, cloth, cellulose fiber or diatomaceous earth filters are furnished in a wide range of capacities for most liquids.

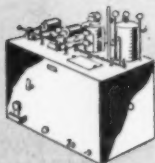


SALES and SERVICE

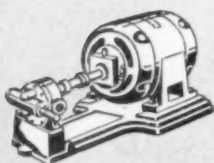
The Bowser Sales and Service System makes the Bowser man your next-door neighbor. Your present metering, filtering or other liquid handling problems will receive our prompt attention.

Write Bowser, Inc., 1334 Creighton Avenue, Fort Wayne 2, Indiana.

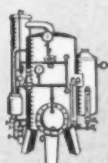
LIQUID CONTROL SPECIALISTS SINCE 1885



LUBRICATORS



PUMPS



VACUUM
STILLS



STORING AND
DISPENSING

(Continued from page 266)

D. Mitchell, Purchasing Agent, Kings County Housing Authority, and the discussions were led by Fred H. Luthle, Westinghouse Electric Supply Co. and Stephen B. White, Seattle Hardware Company. The meeting was presided over by Russell Wetherell, chairman of the educational committee. Professor Don MacKenzie, School of Business Administration, University of Washington, acted in the capacity of moderator.

1 1 1

FIGHTING MAN'S PEACE PHILADELPHIA MEETING

The motion picture "Carbon-Black Treasure" was shown at Forum meeting of the Purchasing Agents Association of Philadelphia, through the courtesy of the National Carbon Company, preceding the regular dinner meeting at the Bellevue Stratford Hotel, April 11th. Principal speaker at the dinner meeting was Jan Valtin, author of "Out of the Night," whose subject was "Fighting Man's Peace."

1 1 1

PRIVATE RELATIONS IN PURCHASING MILWAUKEE

Highlight of the 277th monthly meeting of the Milwaukee Association of Purchasing Agents was an address on "Private Relations in Purchasing," given by John P. Sanger, vice president in charge of purchases for U. S. Gypsum, Chicago. Meeting was held at the Elks Club on April 9th with W. Howell Pritchard, Kearney & Trecker Co., in charge. Three active new members and one associate member were welcomed into the association.

1 1 1

BUYERS STILL MAKE MARKETS NEW YORK MEETING

Stuart F. Heinritz, editor of Purchasing Magazine, was the principal speaker at dinner meeting of the Purchasing Agents Association of New York, in Builders Exchange, April 16th. Mr. Heinritz spoke on the subject "Buyers Still Make Markets." At the Forum preceding the regular meeting, E. P. Scully, Director of Purchases, Engineering & Research Corp., Riverdale, Md., and past vice president of the 8th District, N. A. P. A., led a discussion on "Ideas to Sell."

1 1 1

NATIONAL OFFICERS AT BOSTON MEETING

President Charles L. Sheldon of the N. A. P. A., and District Vice President Everett A. Taylor were guest speakers at the April 9th meeting of the New England Purchasing Agents Association, at Schraft's, Boston.

The Nominating Committee of the local association, Henry G. Saumsiegle, chairman, has prepared the following slate of new officers for the 1946-47 as-

(Continued on page 274)



STEEL USERS KNOW THIS LABEL AS THE

Symbol of Service

WE serve the needs of steel users as completely and quickly as conditions permit. We try at all times to carry well-balanced inventories—to have available sufficient stocks to meet all normal needs. Our nine conveniently located warehouses render good service. We are more than glad to offer every help in solving perplexing problems of steel selection, application and fabrication. These services are of distinct advantage to you. They have made this Label the *Symbol of Service*.

You can always rely upon our best efforts in

helping fulfill your steel requirements. When you need steel—Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Alloy Steel, Stainless Steel, Tools, Machinery, etc.—phone, wire or write our nearest warehouse for prompt and courteous service.

EVERY SUNDAY EVENING, United States Steel presents *The Theatre Guild on the Air*. American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.

UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1315 Wabansia Ave., P. O. Box MM	BRUnswick 2000	NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479	Bigelow 3-5920
BALTIMORE (3)	Bush & Wicomico Sts., P. O. Box 2036	GIllmor 3100			REctor 2-6560, BErgen 3-1614
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42	STAdium 9400	PITTSBURGH (12)	1281 Reedsdale Street, N. S.	CEdar 7780
CLEVELAND (14)	1394 East 39th St.	HEnderson 5750	ST. LOUIS (3)	21st & Gratiot St., P. O. Box 27	MAin 5235
MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045	MITchell 7500	TWIN CITY	2545 University Ave., St. Paul (4) Minn.	NEstor 2821

UNITED STATES STEEL

CLOTH

is what we make it

filled

Intermesh treatment with various types of plastics, starch, etc., to produce a natural cloth finish with various properties such as—toughness, abrasion, resistance, flex strength, grease and oil impermeability, dimensional stability, etc.

impregnated

Interthread treatment with various newer plastics to give bulk strength, stiffness, transparency, resistance to moisture, mildew, heat, cold, chemical actions, etc., retaining cloth surface appearance.

coated

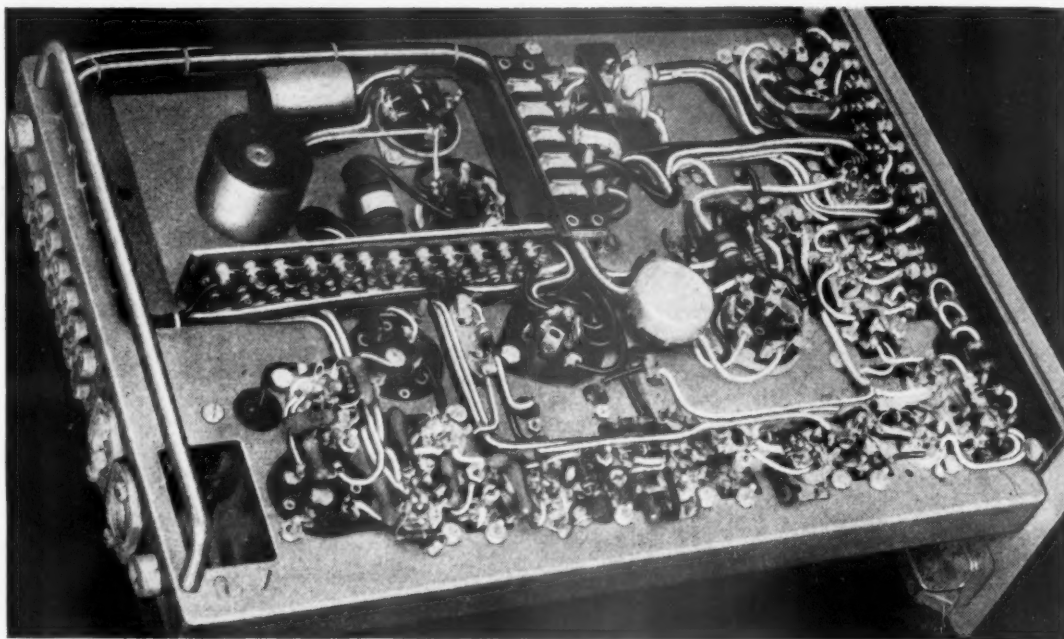
Surface treatment on a cloth structure to meet a great variety of functional and decorative uses.

HOLLISTON

Special Purpose Fabrics

THE HOLLISTON MILLS, INC., NORWOOD, MASSACHUSETTS

IMP
Free
ture,
rang
stran
24 h



WIRING LIKE THIS CALLS FOR THE

FINEST...

FEDERAL'S
Modern, Thermoplastic
RADIO HOOK-UP WIRE

IMPORTANT FEATURES:

Free stripping • Resists burning, aging, moisture, chemicals • Flexible in wide temperature range • Available in 14 colors • Solid or stranded • For 300 and 600 volts • Sizes 24 to 16 (larger on request)

Here's your wire for a neater chassis assembly...for safer, practically ageless wiring. It has the finest quality thermoplastic, thin-wall insulation—high in dielectric and mechanical strength—for the utmost in dependable service, in easy handling, in resistance to damage.

It will pay you to hook-up with Federal "Intelin"* wire. Its outstanding combination of properties makes it the *ideal* conductor...whether you're putting out a painstakingly stitched wiring job or volume production. And Federal engineering assures superb *performance* characteristics in every "Intelin" wire product. Write for samples showing quality and color range.

Reg. U. S. Pat. Off.

Federal Telephone and Radio Corporation

Export Distributor:
International Standard Electric Corporation

Newark 1, New Jersey

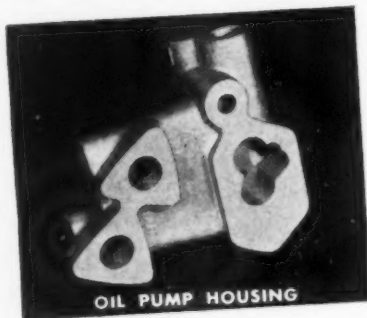




ELECTRIC IRON SHOE

PERMANENT MOLD FOR ALUMINUM CASTINGS

that are
Right!



OIL PUMP HOUSING

PERMANENT and SEMI-PERMANENT MOLD aluminum castings made by Eastern Metal Products Co. are *right* in every respect.

QUALITY

Whether intricate or simple, your castings receive complete EMP service that make *the* better castings. This service covers x-ray testing, physical, chemical and metallurgical control of all production. Heat treating facilities also available.

ENGINEERING

An experienced permanent mold Engineering Department available at your disposal for any of your casting problems.

QUANTITY

A modern foundry equipped to meet your needs for either long or short production runs.

DELIVERY

A reputation for meeting promised delivery schedules.

PRICE

EMP "know-how" permits us to offer sound castings at attractive prices.

Take advantage of these facilities for high quality castings made to *your* specifications. Send in your blueprints, samples or sketches for quotations and engineering suggestions.

INDUSTRIAL DIVISION

EASTERN METAL PRODUCTS Co.

6 DEPOT SQUARE • TUCKAHOE 7, NEW YORK

(Continued from page 270)

sociation year, to be voted on at the May 14th meeting of the association:

President, Lloyd A. Lowe, C. H. Sprague & Son Co.

Vice president, Hendrick Burns, S. D. Warren Co.

Treasurer, Daniel G. Donovan, Pepperell Manufacturing Co.

Directors for 2 years, Frank P. Craig, Boston Edison Co.; George D. Means, State Street Trust Co.; George F. Williams, Eastern Steamship Lines, Inc.

National Director, Frank G. Kennedy, Simplex Wire & Cable Co.

1 1 1

"BUYER LOOKS AT BUSINESS" BUFFALO MEETING

"The Buyer Looks at Business" was the subject of talk by Editor Stuart F. Heinritz of Purchasing Magazine, New York, at the April 10th meeting of the Purchasing Agents Association of Buffalo, which was held at the Niagara Hotel, Niagara Falls, N. Y.

1 1 1

VISIT STEEL COMPANY TORONTO

Members of the Purchasing Agents Association of Toronto had the privilege of a plant visitation at the new sheet mill of The Steel Company at Hamilton, Ont., Wednesday afternoon April 10th, prior to the regular dinner meeting which was held at the Royal Connaught Hotel, Hamilton, where an address was made by G. B. Elevin, vice president and treasurer of the Steel Company.

Commenting on association dinners, the editor of the Toronto Bulletin says: "A committee is being formed to buy up all the chicken or capon in the city, so the Royal York can't serve any more of the darn things. Want to join it?"

1 1 1

ECONOMICS AND RECONVERSION SAGINAW VALLEY

Wesley Mitts, assistant sales manager of Saginaw Steering Gear Division of General Motors, gave an interesting talk on "Economics and Reconversion" at the March 12th meeting of the Saginaw Valley Purchasing Agents Association, at the Bancroft Hotel, Saginaw, Mich. Sixty-six per cent of the membership and five guests were present.

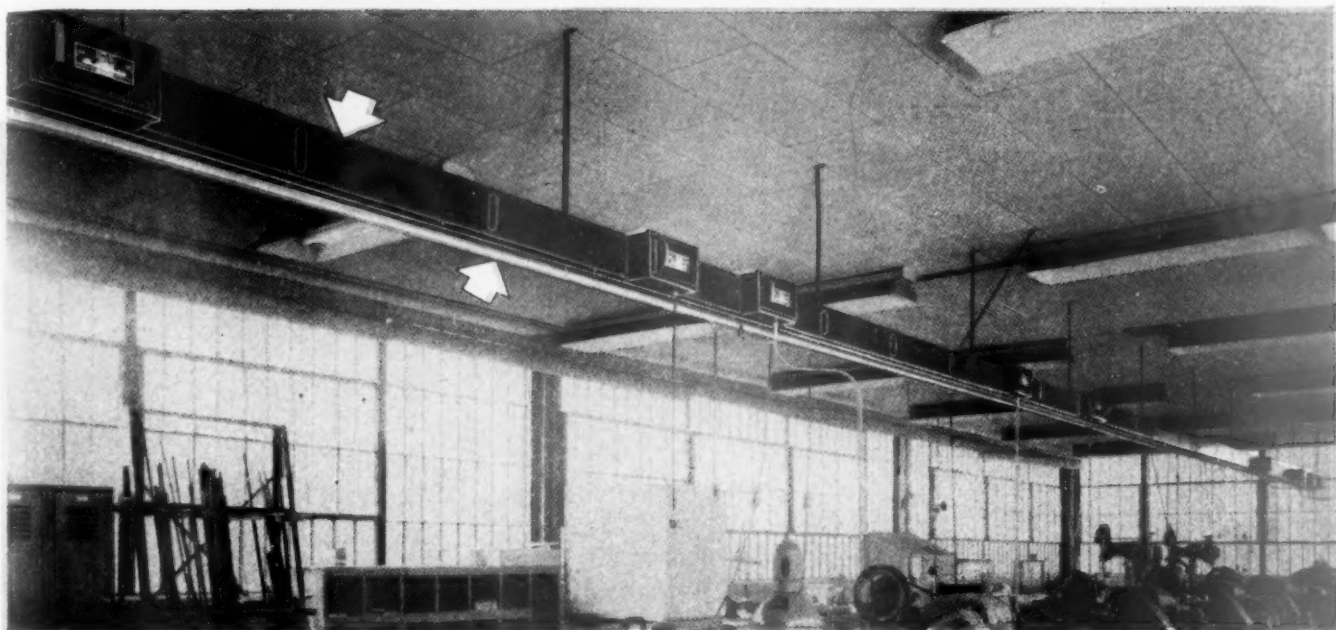
1 1 1

WASHINGTON, D. C. MEETING CORRECTION

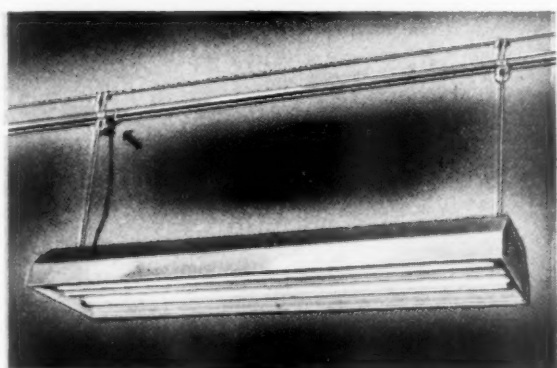
Identification inscription under picture accompanying report of "President's Night" Meeting of Purchasing Agents Association of Washington, D. C., April issue, Page 212, should have read as follows:

Left to right: E. P. Scully; Roland M. Brennan; K. H. Wang, Commissioner, Chinese Supply Commission; C. M. Sheldon, President, N.A.P.A.; H. L. Woo, Principal Engineer, Chinese Ministry of Communications; and E. W. Ely, Chief, Division of Simplified Practice, National Bureau of Standards.

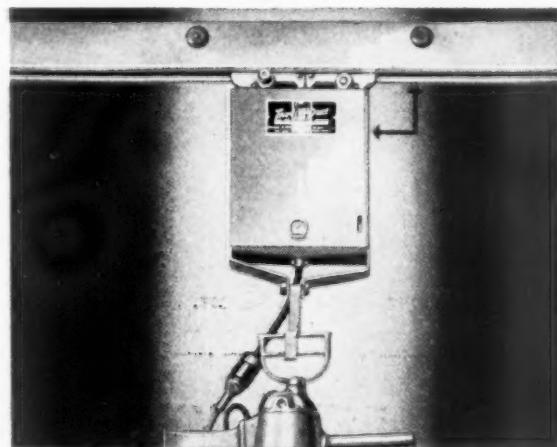
VALUABLE *Time Saved!*



BUS DISTRIBUTION DUCT gives you "Plug-in Power" for any machine set-up.



UNIVERSAL TROL-E-DUCT gives you "Flexible Lighting" which permits you to add and move lights without rewiring, or make radical changes in the lighting scheme any time.



INDUSTRIAL TROL-E-DUCT gives you "Moving Power" for Portable Tools, Cranes and Hoists—easily and quickly installed for ready mobile power.

5114 PLANTS SPEED RECONVERSION WITH BULLDOG DUCT SYSTEMS

The ease and speed with which BullDog Electrical Distribution Systems can be rearranged or relocated—without material loss—is today saving countless hours and expense in the reconversion of thousands of U. S. industrial plants to peacetime production.

By making plug-in power immediately available for any machine set-up—by providing moving power for cranes, hoists and portable tools—by furnishing flexible lighting circuits, these modern Bus Duct systems will help keep production at top speed and efficiency.

If you would like to learn more about these completely flexible methods of power and light distribution, call a BullDog field engineer, or write for descriptive folders.

BULLDOG

Detroit 32, Michigan. In Canada: BullDog Electric Products of Canada, Ltd., Toronto. Field Offices in All Principal Cities.



Also Manufacturers of
Vacu-Break Safety Switches—SafTo-Fuse Panelboards—Switchboards—Circuit Master Breakers.

BULLDOG ELECTRIC PRODUCTS CO.



How Hartford-Empire keeps a moving inventory in sharp focus

Another example of how Standard Register's Systems keep management informed more accurately, more quickly

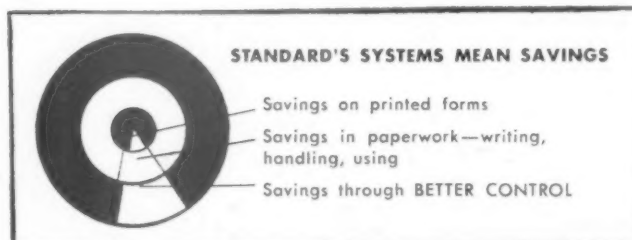
INVENTORY MOVES. It *must* move. And management is recognizing, more and more, the need for an *accurate*, sharply-focused picture of moving inventory at all times . . . to keep production in high gear . . . to avoid excessive capital investment . . . to give management, from top to bottom, up-to-the-minute information on which to *act*.

That's why the Hartford-Empire Company did as so many leading companies in American industry are doing, today. They called in Standard Register representatives to apply Standard's tested Paperwork Simplification techniques.

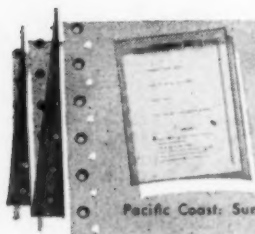
System procedures, writing methods, and form designs were methodically analyzed. Recommendations for improvements were made, accompanied by revealing "motion" pictures—Standard Register's visual flow charts.

Hartford-Empire executives immediately put these recommendations into operation. Top management quickly

realized it was getting information on inventory with greater speed, completeness and accuracy. In addition it found that savings were being effected . . . savings in the processing of paperwork . . . savings through better over-all control by management.



Opportunities for increased efficiency and reduced costs through better control exist in almost every type of business, *not only in inventory but also in all other primary functions*. Talk to a Standard representative. Learn how Standard's paperwork simplification studies and the use of Standard's Kant-Slip Continuous Forms may mean better control, big savings in your business.



WRITE TODAY for a copy of Formcraft Digest D-191, read more about this system. See how Standard's techniques get results. Compare with your own inventory control.

THE STANDARD REGISTER COMPANY

Manufacturer of Record Systems of Control for Business and Industry
405 CAMPBELL ST. • DAYTON 1, OHIO

Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland, California. Canada: R. L. Crain Limited, Ottawa. London: W. H. Smith & Son, Ltd.

PRODUCTION
EXECUTIVE

Office

Equipment and Supplies

Monthly

FORMS FORUM

A System that fills Needs in A Very Fine Way — Purchase Orders, Requisitions and Time-Saving Tracer

System Fills Needs

JAMES M. STEWART, Purchasing Agent for the Elgin Softener Corporation, manufacturers of water conditioning equipment, Elgin, Illinois, furnished the following forms used in a purchasing department system which, he states, "fills our needs in a very fine way." Mr. Stewart describes them as follows:

"Requisitions: These are sent to the purchasing department in duplicate and when the requisition is approved and order issued, the second or carbon copy is returned to the originator of the requisition, providing him with information as to when the order was sent, order number and to whom sent. The original copy remains in the purchasing department files.

"Purchase orders. Six copies are made. The supplier gets original with supplier-acknowledgment copy which is returned to us with advice as to when shipment is going to be made. If no information is given, we then follow up as to the shipping date and continue this until advice is furnished.

"A yellow copy is held for the purchasing department record copy in a binder until the material is received and then transferred to a permanent binder. These are filed consecutively by number.

"A pink copy is for use of the receiving clerk. When the material has been received the receiving clerk marks and certifies its receipt on this copy. The copy is then passed back to the purchasing department to be checked with the purchasing department copy and invoice in the department.

"Copy on white stock is sent to the accounting department, and, the last copy, on tissue stock, is used by the purchasing department for follow-up purposes, being filed alphabetically.

(Continued on page 280)

REQ. DATE	REQUISITION NUMBER 2859	ACCT. NO.	DEPT.	DATE ORDERED	PURCHASE ORDER NUMBER
REQUISITIONED BY	DELIVER TO	NAME			
PURPOSE OR USE	STREET				
QUAN. ON HAND	APPROX. WEEKS REQUIRED	DATE WANTED	DEAD LINE DATE	CITY OR TOWN	
ARE MATERIALS TO BE SENT OUT FOR PROCESSING?	P. R.	SHIP VIA			
R. R. OK'd BY	SPACES ABOVE RESERVED FOR PURCHASING DEPARTMENT USE				
PURCHASING DEPARTMENT — PLEASE PURCHASE THE FOLLOWING:					
Actual size 8 1/2" x 11"					
Form No. 266 - 10M Series - 6-45 - A.P.E.					

Requisitions are received by the Purchasing Department in duplicate, second copy being returned to originating department with information as to order No. and so on.

Phone Elgin 4506 4507 4505	ACCOUNTING DEPARTMENT COPY Elgin Softener Corporation WATER CONDITIONING EQUIPMENT ELGIN, ILLINOIS	PURCHASE ORDER No.
To	Date	Place this number on Packages and Invoices
Gentlemen:—Please ship to our order:	Via	
Actual size 8 1/2" x 11"		
ELGIN SOFTENER CORPORATION		
Purchasing Agent		
Req. No.	Acct. No.	Res. by
Deliver to	Purpose or Use	Deadline Date
Form No. 267 - 10M Series - 6-45 - A.P.E.		

This is accounting department copy of Elgin Softener Corporation's purchase order. Supplier's copy is identical except that information section of base is eliminated.

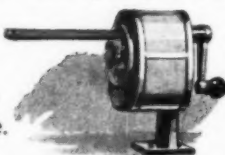
ITS LEAD WILL BOUNCE FROM A CONCRETE FLOOR!



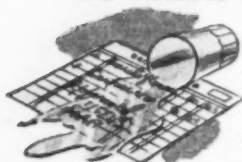
Thousands of tiny fibres, interwoven in every VERITHIN lead, make it so flexible it will bounce without breaking or bend like a bow and spring back!

IT TAKES A PERFECT POINT

in any sharpener every time... and holds it under heavy pressure.



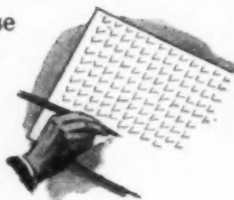
ITS MARKS WON'T RUN WHEN WET



because every color is insoluble... protecting your records from damage by moist hands, rain and flood.

IT MAKES 4,000 CHECKS FROM ONE POINT

and that's real economy! Choose from the 32 brilliant colors listed at right... a wide selection for every use.



10¢ EACH... less in quantities

EAGLE "Chemi-Sealed" (SUPER BONDED)
VERITHIN COLORED PENCILS
EAGLE PENCIL COMPANY, 703 E. 13th St., New York 9, N.Y.
EAGLE PENCIL COMPANY OF CANADA, LTD., TORONTO

32 Vivid Colors

- 734 White
- 734 1/2 Light Grey
- 735 Canary Yellow
- 735 1/2 Lemon Yellow
- 736 Yellow Ochre
- 736 1/2 Orange Ochre
- 737 Orange
- 737 1/2 Sea Green
- 738 Green
- 738 1/2 Light Green
- 739 Dark Green
- 739 1/2 Olive Green
- 740 Ultramarine
- 740 1/2 Sky Blue
- 741 Indigo Blue
- 741 1/2 Azure Blue
- 742 Violet
- 742 1/2 Lavender
- 743 Pink
- 743 1/2 Rose
- 744 Scarlet Red
- 745 Carmine Red
- 745 1/2 Terra Cotta
- 746 Sienna Brown
- 746 1/2 Tuscan Red
- 747 Black
- 747 1/2 Dark Grey
- 748 Red and Blue
- 750 Vermilion
- 751 Emerald Green
- 753 Silver
- 754 Gold

FINAL STEP TAKEN IN PAPER COMPANIES MERGER

By virtue of a merger agreement filed in the office of the Secretary of State on March 28 at Columbus, Ohio, the final step was taken to merge into one corporation the Aetna Paper Company and the Dayton Envelope Company, both of Dayton, the Howard Paper Company of Urbana, and the Maxwell Paper Company of Franklin.

Completion of this merger is the last of a series of steps taken to consolidate these four well-known paper companies into one corporation now known as the Howard Paper Mills, Inc.

On March 1, the Howard Paper Company merged with the Aetna Paper Company. Inclusion of Maxwell Paper Company and Dayton Envelope Company completes the formation of Howard Paper Mills, Inc. at Dayton.

There will be no change of corporate directors or officers. The other organizations will continue to function as divisions of the Howard Paper Mills, Inc.

1 1 1

ROYAL TYPEWRITER VICE PRESIDENT PRESENTED WITH 25TH YEAR GOLD WATCH

Maxwell V. Miller, Vice-President In Charge Of Sales, Royal Typewriter Company, Inc., was honored recently with the presentation of a twenty-fifth year commemorative gold watch by Treasurer



M. V. Miller, Vice-President—In Charge of Sales

Arthur E. Davis, on behalf of President E. C. Faustmann, in a ceremony attended by personnel of Royal's New York Executive Offices.

Following the initial tribute, H. C. Draper, Manager of Sales Policy and Research, presented Mr. Miller with a combination desk clock, thermometer and barometer, a gift from Executive Office Department Heads.

Mr. Miller joined Royal years ago as a junior salesman. Rapidly promoted through the years, he has served in his present capacity since 1937.

1 1 1

KOROSEAL UPHOLSTERED OFFICE CHAIRS INTRODUCED

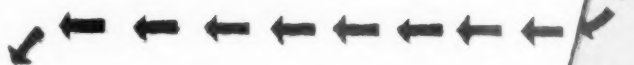
The Harter Corporation, Sturgis, Michigan, maker of metal furniture, has introduced a new line of office chairs upholstered in Koroseal.

(Continued on page 283)

SEE IT DEMONSTRATE
at Booth No. 104
INFORM-A-SHOW
Stevens Hotel, Chicago
May 27 to 29

REG. U.S. PAT. OFF.

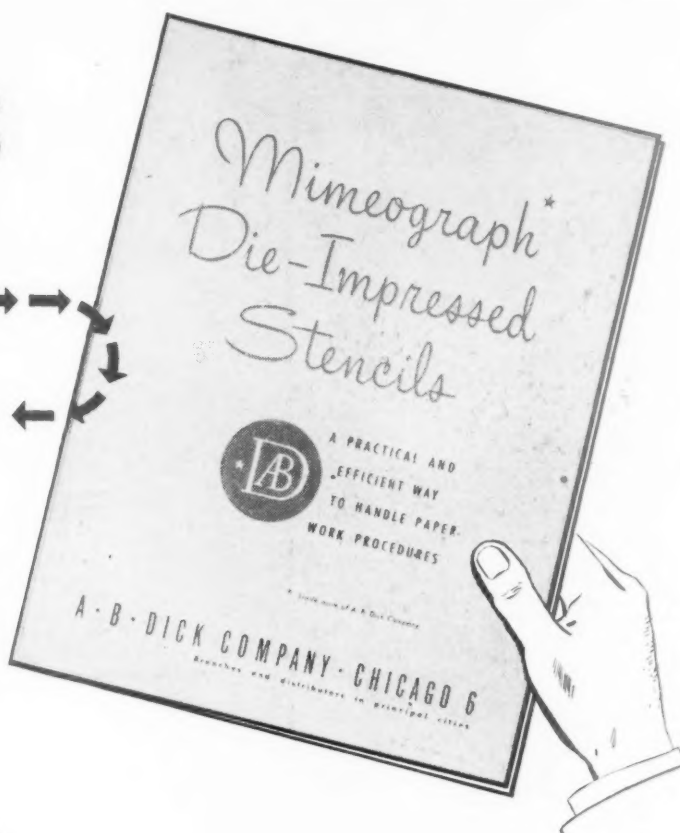
Send for this free folder! →



IT EXPLAINS

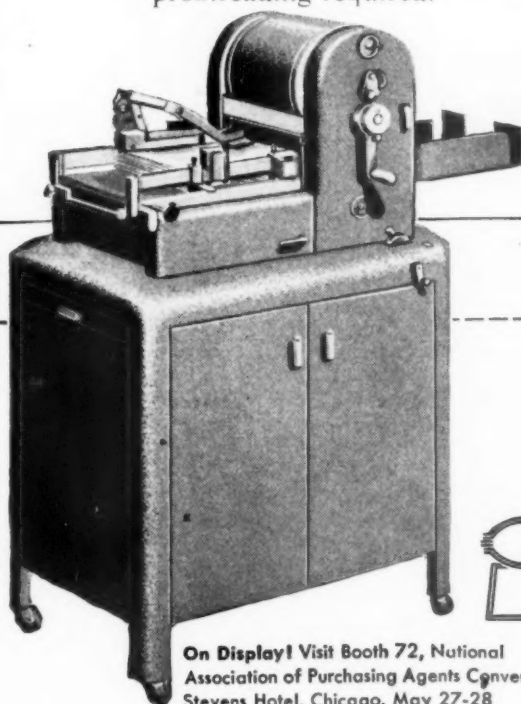
How to get new speed and simplification in production paper work, factory systems, methods and routines with Mimeograph* die-impressed stencils

What they are and what they do for you
... this new folder tells about Mimeograph die-impressed stencils. All about how they
... make paper work systems *one-writing* systems.
... eliminate the need for large quantities of forms.
... increase accuracy with all copies produced from a single writing; only one proofreading required.



... produce as many copies as you want when you want them, in clear, clean black-and-white that won't smudge even under hard handling or fade under exposure.

To get the whole story on this tried-and-tested use for that Mimeograph duplicator you now have—or will be getting soon—just clip and mail the coupon today.



Mimeograph duplicator

* MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office

COPYRIGHT, A. B. DICK COMPANY

A. B. DICK COMPANY, Dept. P-546
720 W. Jackson Blvd., Chicago 6, Illinois

Send me a copy of your new folder,
"Mimeograph Die-Impressed Stencils."

Name

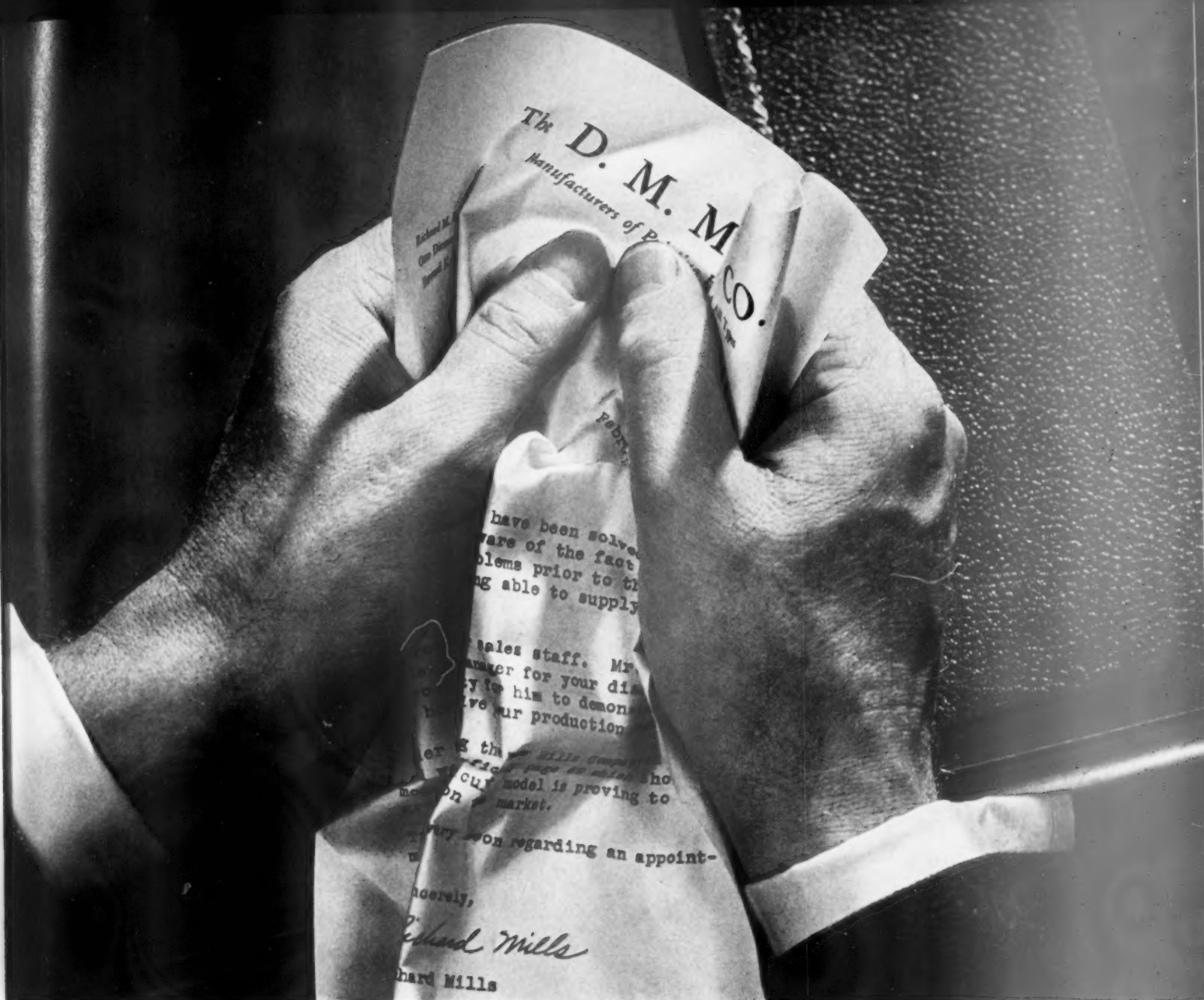
Company

Street

City State

On Display! Visit Booth 72, National Association of Purchasing Agents Convention, Stevens Hotel, Chicago, May 27-28





COLOR PHOTOGRAPH BY LÉON DE VOS

No Sale!

You're looking at a missed opportunity—one that reached its goal, and then failed. Perhaps it was poorly presented. Perhaps the very fact that it arrived on a poorly printed and poorly designed letterhead was the cause.

Good letterheads are worth the time and thought required to create

them. And even the best letterhead needs the support of a really fine letterhead paper.

HOWARD BOND, for instance. In whitest white, or in any of its clear, clean colors, it does justice to what you have to say. It emphasizes the importance of your message, helps

create an atmosphere that says, "*This is worth reading.*" Thousands of American businesses use HOWARD BOND, not only for letterheads, but for invoices, business forms, and other vital kinds of business printing. In fact, the great numbers who use HOWARD BOND have made it famous as "*The Nation's Business Paper.*"

HOWARD PAPER MILLS, INC. • HOWARD PAPER COMPANY DIVISION, URBANA, OHIO



HOWARD BOND

"THE NATION'S BUSINESS PAPER"



COLOR PHOTOGRAPH BY EUGENE HUTCHINSON

UNIFORMITY Printers everywhere find in *Maxwell Offset* a tub-sized sheet whose behavior on the press is always the same, whose qualities conform to good printing standards on the next job as well as the last. To advertisers *Maxwell* offers—through fine printing—the sound economy of a stronger vehicle for hard selling. Understandably, then, more and more *Maxwell* is used on more and more of the nation's presses every day.

HOWARD PAPER MILLS, INC.

MAXWELL PAPER COMPANY DIVISION • FRANKLIN, OHIO

Maxwell Offset

For uniformity—in finish, in strength, in ink consumption, in whiteness or color conformity

(Continued from page 278)

"In presenting Koroseal in office equipment," said Evan S. Harter, president of Harter Corporation, "we believe we are establishing a new high in efficiency and economy. This modern material has so many advantages that the normal life of an office chair will be greatly extended. Koroseal will also make for better-looking offices because it keeps its new appearance so long."

The new chairs are offered in three colors — green, maroon and brown. Being completely waterproof, Koroseal can be washed as easily and safely as glass. It is highly resistant to abrasion and possesses permanent flexibility. It will not stick or crack and remains smooth and wrinkle-free, even over the softest foam rubber.

In addition, Koroseal upholstery is scuff-proof and resists ink, perspiration and grease. It is not affected by heat or cold and is odorless.

1 1 1

HANG-A-FILE INTRODUCED

Illustration shows the Hang-A-File introduced by Louis H. Farber, 30 E. Congress St., Chicago, Ill., which is char-



Complete filing unit.

acterized as being a complete filing unit. The file is all metal, caster equipped and is 13 1/4" wide, 18" deep, and 27" high. There are 25 of the insertable tab guides. The folders are supported by chrome finish metal hanger which rests on guide rails.

1 1 1

R. W. SHAVER MADE GEN. MGR. C. C. C. PAPER MILL DIVN.

R. W. Shaver has been appointed general manager of the paper mill division of Continental Can Company, according to an announcement by Hans A. Eggerss, executive vice president. This division, which is part of the over-all paper division comprises two paper manufacturing mills located at Filer City, Michigan, and Lyons Falls, New York.

Mr. Shaver, who was formerly vice president and general manager of the

(Continued on page 286)



SECRETARIES all like Carter's Midnight Carbon. Famous for making clean, sharp copies, this fine carbon paper is surprisingly easy to handle—never curls or wrinkles. It's durable too—it wears and wears and wears!

Take a tip from the kitten. Let Carter's Midnight Carbon help you save the time of your busy office staff!



THE CARTER'S INK COMPANY

Boston, Massachusetts

Carbon and Ribbon Specialists

(Forms Forum continued from page 280)

Requisition and Purchase Order

THE accompanying purchase order and requisition were furnished by A. H. Krueger, Purchasing Agent, The Visking Corporation, 6733 West 65th St., Chicago, Illinois. The requisitions are prepared by the originator in dup-

copy is sent to the receiving department with third or pink copy. When material is received, the receiving-voucher copy is filled in by the receiving clerk and forwarded with the material to the person originating the requisition. Goods



Fibre is Foremost-

IN PAPER TOWEL QUALITY!

Only long fibre, pure raw materials can produce the high quality of Straubel TEXTURIZED Towels. Long fibres make these towels sturdy... special processing gives them high absorbency... pleasant to use because they're TEXTURIZED.



Straubel Interfold Toilet Tissues for every type of fixture... quality papers that dispense without waste, for better washroom service. Order now from your Straubel Distributor.

Straubel
PAPER COMPANY
GREEN BAY, WISCONSIN

TWO LEAF • THREE LEAF • *Alcone*
CONVENIENCE CUT TOILET TISSUES
Straubel TEXTURIZED TOWELS •
GROUNDWOOD-SULPHITE TOWELS

Form 28 10M 210-44

Purchase Order N° 42368

THE VISKING CORPORATION
6733 West Sixty-Fifth Street, CHICAGO 38, ILL.
TELEPHONE PORTSMOUTH 8200

To ☐ Date ☐

Actual Size 8 1/2" x 11"

Please enter our order SUBJECT TO THE CONDITIONS ON THE REVERSE SIDE OF THIS ORDER, for the following, to be delivered to:

Ship Via

F.O.B.

Terms

QUANTITY DESCRIPTION PRICE

PRICES ARE NOT TO BE IN EXCESS OF THOSE AUTHORIZED BY OPA.

Our Purchases Depend On Our Sales
Help Both Of Us By Asking For And Serving In Your Home
SAUSAGE IN GENUINE "VISKING" CASINGS IDENTIFIED WITH OUR SEAL
ALSO "NOJAX" SKINLESS FRANKFURTERS

Charge Job No. Yours truly,
Send to THE VISKING CORPORATION
PER PURCHASING AGENT

ORDER NUMBER MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, FOR RESPONSE, AND INVOICE.
COMPLETE PACKING LIST MUST ACCOMPANY EACH SHIPMENT.
Wanted DATE
IF YOU CANNOT SHIP TO ARRIVE AT OUR PLANT BY THIS DATE PLEASE ADVISE AT ONCE.

OUR RECEIVING DEPARTMENT IS OPEN ON SAT. DAYS.

The Visking Corporation's purchase order form utilizes excess space for promoting the company's products. On the rest of the copies, this space and that below it is occupied by form for shipping and invoice data section—illustrated below.

PRICES ARE NOT TO BE IN EXCESS OF THOSE AUTHORIZED BY OPA.

Date Received	Count O.K.	DATE OF INVOICE
How Received	Extensions O.K.	Amount of Invoice
Freight Charges	Price O.K.	Discount
Voucher No.	F.O.B.	Accounts Payable
Charge	Goods Accepted Rejected	Examined by Approved For Credit
VisC	Job No.	
	Send to	

N° 42368


licate. Requisitions are retained by the purchasing department, and filed by name of the vendor, serving as a purchase record.

Six copies of the purchase order are prepared, in the following color pattern: Original (white)* is mailed to the vendor; the second, or receiving-voucher

are inspected and notation is made in the space provided for acceptance or rejection, and copy is then sent to the accounts payable department for matching with the invoice. The pink copy is sent to the expeditor by the receiving department, immediately upon receipt of

(Continued on page 290)

Today's top **TIP**



FOR **practical
easy-to-operate
effective**
EXPEDITING

VISIBLE FOLLOW-UP
combined with purchase
order records file!

Today, with expediting more important than ever, hundreds of purchasing men are using the famous Follow-Up Folder with Visible Tip to get positive, on-time action.

It's the most practical, easy-to-operate and effective expediting control ever devised!

Sliding colored signals flash the follow-up date of every order in the file, giving you instant and positive selection each day of all items requiring action.

Also, you have a quick-reference record filed in alphabetic or numeric sequence, holding copies of purchase orders with vendors' acknowledgements and related correspondence. *No separate tickler files are required.*

For economy, these tough jute binders are usable over and over

again... and the removable title inserts can be changed in a moment.

Time saved now in obtaining materials, tools and parts means time gained in getting into profitable production. Investigate the Visible Tip method today.

Our nearest Branch Office will furnish details and prices. Or write us in New York.



SYSTEMS DIVISION

Remington Rand

315 Fourth Avenue, New York 10, N. Y.

CALL ON *Columbia* FOR *Colitho*

LITHOGRAPHIC PAPER "MASTER PLATES"
FOR ALL OFFICE OFFSET MACHINES

FOR ALL TYPES OF DIRECT-IMAGE DUPLICATING
GIVES CRISP, CLEAN, CLEAR, JET BLACK
SIMULTANEOUS IMPRESSIONS OF
FORMS & FILL-INS

BUSINESS SYSTEMS • CHARTS • GRAPHS • FORM LETTERS
STOCK & PRICE LISTS • DIRECTION & INSTRUCTION SHEETS
ADVERTISING MATERIAL, etc.

REPRODUCES TYPE, TYPEWRITING, HANDWRITING,
CRAYON, PENCIL — AN UNBELIEVABLE VARIETY OF BLACK
& WHITE LINE-WORK AND LINE-ILLUSTRATION.

MASTER SHEET DATA AND DIAGRAMS CAN BE ERASED
EASILY AND CLEANLY FOR ALTERATION ON THE ORIGINAL
— WITH NO "MESSY" ALTERATION-EVIDENCE VISIBLE ON
THE DUPLICATE COPIES.

CLEAN AND EASY TO HANDLE. WILL NOT SMUDGE OR
PICK UP DUST OR DIRT.

CONVENIENT TYPING AND WRITING GUIDE
ON EVERY MASTER SHEET.

COLITHO SUPPLIES INCLUDE — ETCH AND FOUNTAIN SOLU-
TION — RUBBER BLANKETS — OFFSET INKS, BLACK AND ALL
COLORS—BLANKET AND ROLLER WASH—AQUATEX COVERS
—WRITING AND RULING INKS—CARBON
PAPER—FABRIC AND CARBON PAPER
RIBBONS — CRAYONS — STAMP
PADS — etc.

COLUMBIA RIBBON & CARBON MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y.
New York Sales & Export: 58-64 West 40th St.,
Midwest Sales: Kansas City, Mo., Dwight Bldg.
Chicago • Detroit • Milwaukee • Minneapolis
Nashville • Philadelphia • Pittsburgh • Portland,
Oregon • Cincinnati (Harris-Moers Co.) • Atlanta,
Also: London, England • Sydney, Australia.

WRITE OR PHONE THE
COLUMBIA OFFICE NEAREST YOU
FOR PRICES AND INFORMATION.

(Continued from page 283)

Gould Paper Company, Lyons Falls, New York, recently acquired by Continental Can Company, will continue to make his headquarters at the Lyons Falls plant.

1 1 1

BRUNING COMPANY ANNOUNCES TEN-INCH SLIDE RULE

To fill the need for a slide rule of greater dimensional stability, the Charles Bruning Company 4754 Montrose Ave., Chicago, Ill., has recently introduced a new 10-inch Slide Rule.

This new slide rule is made of a plastic material that is said to have remarkable dimensional stability. The precision graduations are not affected by temperature change. The glass indicator is mounted in a polished stainless steel frame that holds it firmly in place.

The graduations are precise and will not lose visibility through use. The CI scale shows numerals and graduations in red to provide ease of reading. To permit the widest possible range of service, A, B, CI, C, D, K, S, L, and T scales



are shown on the rule. The beveled edges of the rule are graduated in inches and centimeters.

This new Bruning 10-inch Slide Rule is smooth working for fast and easy operation. Because of its all-plastic construction, binding or sticking of the slide under varying atmospheric conditions is eliminated. The tension on the slide is easily adjusted by four screws on the back of the rule. The indicator glass may be replaced in the event of breakage.

1 1 1

CHEMICAL IMPROVES SHARPNESS OF BLUEPRINTS

Greatly improved reproduction of blue printing and related processes is made available by a new treatment worked out by H. P. Andrews Paper Company of New York with assistance of Monsanto Chemical Company's Merrimac Division.

The new treatment provides greater sharpness in lines, more fidelity in details, and a brighter color in blue prints and photo reproductions. It is based on Syton, a modified silica product of Monsanto, originally developed for use in treating textiles. Syton is applied as a water solution to the base paper before coating with light sensitive materials. The paper may be pre-treated by blue print paper coaters, although mill application at point of manufacture may be ultimately utilized.

Although the new treatment is most evident on drawings utilizing fine lines

(Continued on page 288)

"The Boss was in a Stew!"



I'm callin' on the Boss, and he's boilin'! His clerks are laggin', his output saggin'. "Don't blame your office-force," I sez. "What they need is some modern equipment. Like SPEED's Swingline Stapling Team! That No. 4 Stapler has the greatest single stapling-improvement in years—the wide-open loading channel. Flick-Load-Click—and it's ready! Fast, yet trouble-free and it penetrates at the lightest finger-touch!"

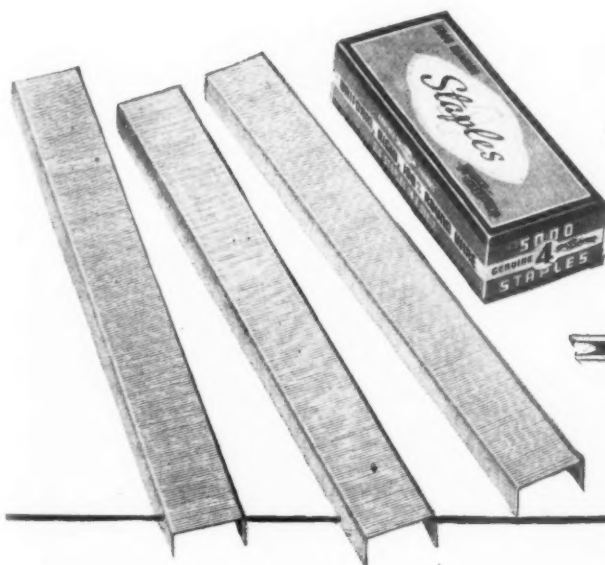
I warm up as the Boss shows interest.

"Those No. 4 Staples fit any standard machine," I go on, "and their superior qualities give you more for your money. They're precision made, 100% uniform, and purposely round—not flat—to eliminate excess glue and prevent clogging. Take my advice, Boss—don't accept substitutes!"

"No substitutes for me!" enthuses the Boss. "I'm ordering that Swingline Stapling Team today!"

SPEED PRODUCTS CO., INC.
Long Island City 1, N. Y.

ALL SPEED PRODUCTS
SOLD THROUGH DEALERS ONLY



● SPEED Swingline Staples
fit any standard stapling
machine



Swingline

NO. 4 STAPLER AND STAPLES

WORLD'S SPEEDIEST STAPLING TEAM

BUSINESS RECORDS provide the answers to a thousand VITAL QUESTIONS

What are your records worth? In terms of *material and preparation cost*, one of the smallest items of business expense. But in terms of their *use* to you, no figure would cover their indispensable value. How about your key records — production, distribution, financial, legal, insurance — the records that keep your business running smoothly and on course? Are they protected against use and abuse? Against time and constant handling?

Take a tip from archivists and public record keepers. For generations they have preserved the nation's priceless records of life and property on WESTON Paper. This most exacting use has proved that WESTON Cotton Fibre Content Record, Ledger, Bond, Index and Machine Accounting Papers possess the qualities of resistance and endurance which the value and importance of *your* records demands. Byron Weston Company, Dalton, Massachusetts.



*Keep records worth keeping
on WESTON Paper*

Weston

Makers of Papers
for Business Records



(Continued from page 286)

and details, it provides an improvement on virtually all types of reproduced drawings. The greater sharpness and fidelity is especially noticeable on reproductions of tracings made with pencil.

Under present practices, pencil lines reproduce weakly and indistinctly. If printing and developing conditions are adjusted to bring out pencil lines a washed out appearance is often given to the whole print. With the new method of treatment, it is possible to bring out pencil lines without markedly affecting the overall quality of the print.

1 1 1

NAMED ASSISTANT TREASURER VICTOR ADDING MACHINE CO.

A. C. Buehler, president and board chairman, Victor Adding Machine Co., Chicago, Ill., has announced appointment of James F. Strong as assistant treasurer for that company.

Mr. Strong, recently released from the Navy, served as Supply Officer on an



J. F. Strong, Assistant Treasurer.

assault transport in Pacific and Japanese waters. Prior to being commissioned a naval lieutenant he served as war contract coordinator for Victor. He has been with the company since 1940, holding the position of credit manager.

In his new office, Mr. Strong will handle finance policy, credit and collections, and cash control.

1 1 1

CENTRAL PAPER COMPANY ANNOUNCES DETROIT AND BUFFALO CHANGES

E. W. Pitt, the Director of Sales, Central Paper Company, Inc., Muskegon, Michigan announces two changes in sales personnel.

J. Ford Blickley has been promoted from the position of salesman in the Detroit Office to that of district manager of the territory previously served by J. Ed. Willson of Buffalo, who resigned.

Leslie Roen has been promoted from the sales offices in Muskegon to salesman, replacing Mr. Blickley in Detroit.

Mr. Blickley, in assuming the managership of the outstate New York territory is moving his headquarters to Central Paper Company, Inc., 1814 Temple Bldg. at 14 Franklin St., Rochester 4, New York. This move was taken since Rochester is more centralized for Mr. Blickley's area and will aid him in serving Central's many clients.

*No other typewriter
has been FIRST so many times!*



Underwood first scooped the field fifty years ago . . . by revolutionizing typewriter construction with the first front-stroke visible writing machine.

This epoch-making achievement was so far ahead of any typewriter on the market, that other manufacturers simply had to scrap their designs . . . and follow Underwood's lead.

Since then...its milestones studded with many brilliant mechanical firsts . . . Underwood has consistently remained "Typewriter Leader of the World."

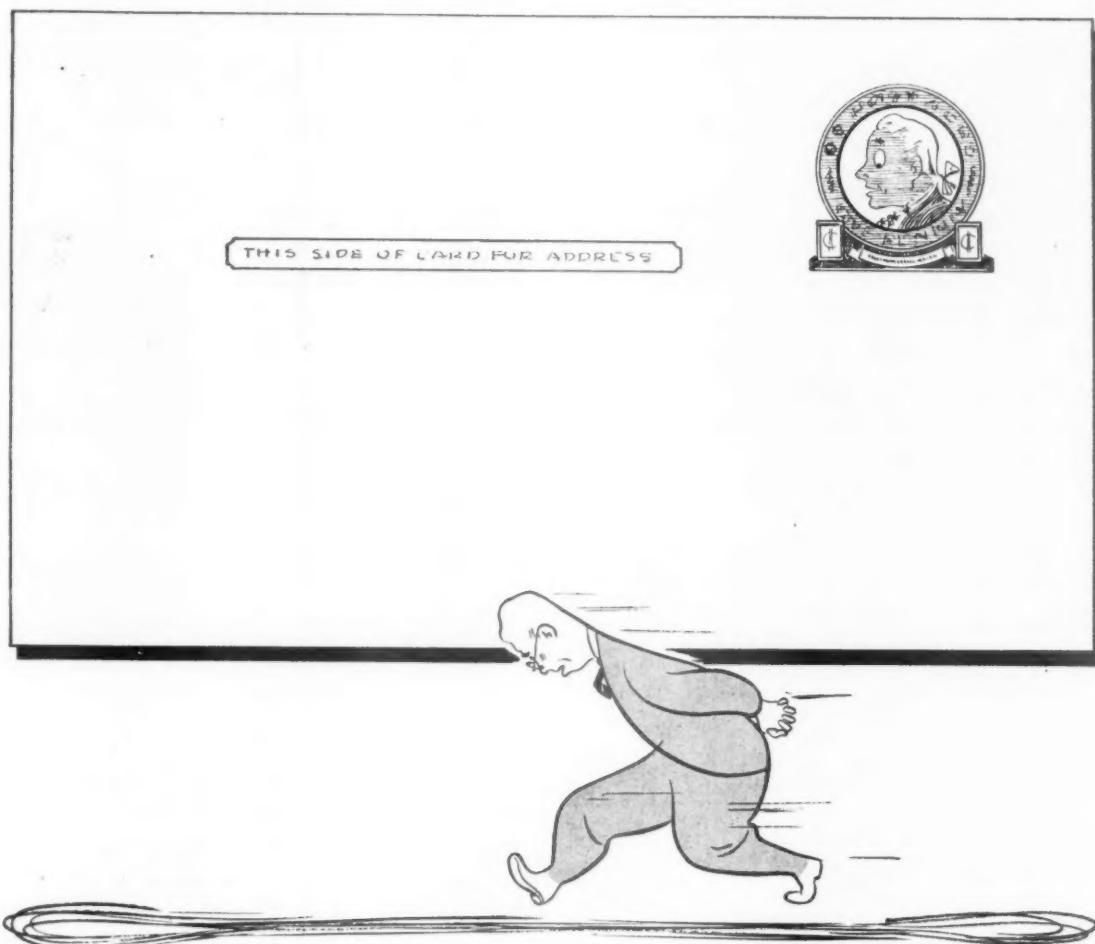
Fifteen Famous Firsts in the Development of the Front Stroke Visible Typewriter...The *Underwood:*

- 1 THE FIRST TYPEWRITER with all the writing in sight all the time.
- 2 THE FIRST FRONT MARGIN STOPS
Easiest to reach and easiest to set—of all margin stops.
- 3 THE FIRST COUNTERBALANCED SHIFT with right and left shift keys.
- 4 THE FIRST LEFT HAND CARRIAGE RETURN
Leaves left hand in typing position.
- 5 THE FIRST 2-COLOR RIBBON feature permitting a choice of two colors by the switch of a lever.
- 6 THE FIRST FRONT STROKE ACCELERATED TYPE-BAR ACTION
Gives ease of touch and quality of imprint.
- 7 THE FIRST INDIVIDUAL KEY LEVER TENSION
Permits touch adjustment of each key.
- 8 THE FIRST SHIFT KEY LOCK WHICH SHIFTS AND LOCKS IN ONE OPERATION
Eliminates additional locking operation.
- 9 THE FIRST FRONT MARGIN RELEASE KEY
Permits writing in left margin without disturbing the marginal stop.
- 10 THE FIRST UNIVERSAL BAR ACTUATED DIRECTLY BY THE TYPE BAR
Spaces carriage with minimum of effort.
- 11 THE FIRST STAR WHEEL ESCAPEMENT WITH BEVEL-TOOTH FIXED DOG
Specially designed to speed movement of carriage.
- 12 THE FIRST CENTERING SCALE
Permits quick and easy centering of headings on paper.
- 13 THE FIRST INBUILT TABULATOR (SINGLE KEY)
The tabulator as part of the machine not an attachment to it.
- 14 THE FIRST TYPE-BAR GUIDE
To control the printing point.
- 15 THE FIRST TYPEWRITER READILY ADAPTABLE TO STENCIL CUTTING
Mere touch of lever renders the ribbon inoperative.

Underwood Typewriter Leader of the World

UNDERWOOD CORPORATION, One Park Avenue, New York 16, New York

Copyright 1946, Underwood Corporation



What's An Idea Worth to You?

Is it worth a penny post card? Is it worth a letter? Is it worth saying "Yes, Siree, I'd like to have a copy of that portfolio 'Eastern Fine Papers for Business' "?

Once you've received this portfolio you'll see how easy it is to get ideas . . . ideas that will help you in using and buying paper for your business.

So send for your copy today. See the many ways of using to your advantage Atlantic Bond, Ledger, Duplicator and Mimeo papers as well as Manifest Bond, Ledger, Duplicator and Mimeo.

*Atlantic
Bond*

MADE BY
EASTERN CORPORATION
BANGOR, MAINE

FREE TO PURCHASING MEN!



Klee-Vu Plastic Envelopes offer low-cost way to cut errors, boost output

Send today for this 9" x 12" standard Klee-Vu Plastic Envelope and show it to your production executives. They'll see its advantages at once. Klee-Vu Envelopes keep factory records, job cards, etc.; clean and neat, free of dirt, grime, fingerprints. They eliminate doubts about written instructions. They help avoid errors and make-overs on vital jobs and speed up work. Excellent for keeping much-handled office forms bright and clean—save re-copying and re-typing time. Cost is low—production savings high. Send for your free sample by filling in and mailing the coupon below.

Many styles to choose from!

There's a Klee-Vu Plastic Envelope for every purpose. Special styles at slight extra cost. Write for your free sample today. Attach coupon to your letterhead.



AMERICAN PLASTIC PRODUCTS
2907 S. Main Street Los Angeles 7, Cal.
Branch Office and Warehouse:
190 Berry St., Brooklyn, N. Y.

FREE SAMPLE! Mail Coupon!

AMERICAN PLASTIC PRODUCTS
2907 S. Main St., Los Angeles 7, Cal.
Gentlemen: Please send us, without cost,
one of your standard Klee-Vu Plastic
Envelopes, as illustrated above.

Company

Address

City Zone.... State.....

THREE-HOLE, THREE-RING BINDER PUNCH

Improved 3 hole punch for 3 ring binders, known as the Clix, has been brought out by the New England Paper Punch Co., 95 Washington Ave., Natick, Mass. Clix punches three $\frac{1}{4}$ " holes, spaced $\frac{1}{4}$ " on centers, overall $8\frac{1}{2}$ " on center, spaced $\frac{1}{4}$ " from back binding edge, and $1\frac{1}{4}$ " on center from bottom of sheet—standard spacing for 11" x $8\frac{1}{2}$ " sheets. It weighs less than a pound.

1 1 1

MICROFILMING EQUIPMENT BY DIEBOLD INC.

Microfilm equipment known as Flow-film, a complete office system that processes the film in less than an hour after the film has been exposed, is being marketed by Diebold, Inc., Canton, Ohio. Present available units include the camera, processor, and motorized reader. The camera accommodates subjects 14" wide by any length, and incorporates a



Available units of equipment include the camera, processor and motorized unit.

positive printer. The unit has interchangeable lenses that permit various reductions to make full 35 mm. images or two rows of 16 mm. images. Synchronized motors accomplish perfect flow between film and copy. The processor, in which it is possible to completely process exposed film within 55 minutes after exposure, will process any length of 35 mm. film. The reader is an all electric unit that will accommodate either 16 mm. or 35 mm. film, either perforated or non-perforated. The reader screen is of universal focus, whether film is still for viewing or moving from picture to picture. The equipment uses 35 mm. film which can be retained in the 35 mm. rolls or split to form two rolls of 16 mm.

1 1 1

WHICH CARBON AND WHEN

Since carbon paper comes in many finishes—here is a helpful guide to assist you in making your selections. Carbon paper finishes range from extra light to extra dense. The following chart indicates which of the most popular finishes (Continued on page 296)

*We have reduced
our Typing, mailing,
and Filing costs
by using*



ESLEECK THIN PAPERS

They are strong and durable, yet have minimum bulk. Their lightness and strength combined, allow us to make numerous clean, clear carbon copies. We use them now for Thin Letterheads on all our Branch Office, Foreign and Air Mail correspondence. We also use the distinctive colors for our office records and factory forms.

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

SEND FOR SAMPLES

ESLEECK

Manufacturing Company

Turners Falls, Mass.



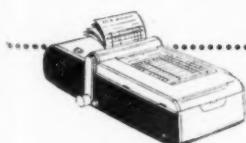
That's a question which arises in any business—if the necessary instructions aren't "on hand" for every job. For whether it's shoes or ships you market, thousands of orders must be given—purchasing, receiving, disbursement, shipping, warehousing and so on and so forth until your list of routine orders and records runs into the hundreds. This is the routine work that must be done to plot the movement of a product to, through and from the plant.

Today such routine depends upon *forms*—for they are the medium by which the many varied departments of modern business are tied together.

Ask yourself if you have too many or too few forms?

Could several be combined? Are your present forms too costly to handle? Ask Uarco and these questions will quickly be answered to your satisfaction. For Uarco's business is to study the problems of routine operations—to suggest means of improving the efficiency of business through forms—to give you complete control, accuracy and speed in your organization by the means of *correct forms*.

Call your Uarco representative today—without cost, he'll study your present forms and suggest means of improving them. Or write us for added details. UARCO INCORPORATED, Chicago, Cleveland, Oakland. *Offices in All Principal Cities.*



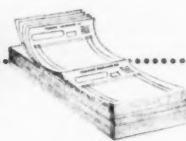
AUTOGRAPHIC REGISTERS



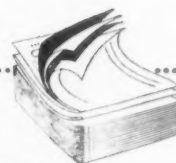
SINGLE SET FORMS



BUSINESS FORMS



CONTINUOUS-STRIP FORMS FOR
HANDWRITTEN TYPEWRITTEN BUSINESS MACHINE RECORDS



COMMERCIAL FORMS AND SYSTEMS



An ally of modern management, Reynolds and Reynolds is one of the world's largest suppliers of printed or lithographed control and operational forms.

- CARBON INTERLEAVED SYSTEMS
- BUSINESS MACHINE FORMS
- PAYROLL CHECKS and SYSTEMS

Effective Advertising
Literature, Distinctive
Stationery and Business
Forms of every kind

The
REYNOLDS
&
REYNOLDS

COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN
MANY PRINCIPAL CITIES

(Continued from page 290)

"Reply" or "Remarks." H. E. Zuck, Purchasing Agent, in whose department the form was developed, states that it saves a "great deal of time and effort in letter writing and "has become a very important part of our purchasing procedure."

It is a two-copy form with snap-out

ment copy. Copy for the receiving clerk is on pink stock. The bottom of this copy provides an indicated space for notifying the receiving clerk whom he is to notify when the goods are received. "This feature is very important to us," states Mr. Zuck, "and it is used on partially every order. Without it, we find that the receiving clerk merely makes out the usual

Renown Stove Company

No. 00761

1000 WEST EXCHANGE STREET

Owosso, Michigan

Actual Size 8 1/2" x 11"

DATE

WE ARE TRYING TO CONSERVE YOUR TIME AS WELL AS OURS BY USING THIS FORM. IT IS SENT IN DUPLICATE TO ENABLE YOU TO USE THE ORIGINAL FOR A REPLY AND KEEP THE DUPLICATE FOR YOUR FILES.

This is an **IMPORTANT REQUEST** for **INFORMATION**

CONCERNING OUR ORDER NUMBER _____ DATED _____ PLEASE ANSWER ITEMS CHECKED

SHIPMENTS	CHECK	REPLY	INVOICES	CHECK
1. WHEN WILL YOU SHIP?			11. PLEASE MAIL INVOICE TODAY	
2. MAIL ACKNOWLEDGMENT SENT YOU WITH ORDER			12. INVOICE IS REQUESTED IN DUPLICATE	
3. DID YOU SHIP ON DATE SHOWN ON ORDER?			13. PLEASE MAIL BILL OF LADING (DUPLICATE)	
4. HOW DID YOU SHIP?			14. PLEASE MAIL FREIGHT BILL	
5. CAN YOU ADVANCE SHIPPING DATE PROMISED?			15.	
6. PLEASE MAKE YOUR DELIVERY PROMISE MORE SPECIFIC			16.	
7. RELEASE SHIPMENT AS SHOWN UNDER REMARKS			17.	
8. PLEASE START TRACER ON SHIPMENT MADE			18.	
9. WHEN WILL REMAINDER OF ORDER BE SHIPPED?			19.	
10. WHY DID YOU NOT SHIP AS PROMISED?			20.	

REMARKS

IN SELECTING OUR SOURCES OF SUPPLY WE GIVE CONSIDERATION TO THE RESPONSE GIVEN TO THE FOLLOWING REQUESTS:

1. THAT YOU WILL ENDEAVOR TO KEEP YOUR DELIVERY PROMISE.
2. THAT YOU WILL NOTIFY US OF ANY UNAVOIDABLE DELAY AS SOON AS YOU ENCOUNTER IT.
3. THAT YOU WILL INVOICE PROMPTLY.

Renown Stove Company

BY _____

carbon. The original white copy is sent to the supplier, with information or material wanted indicated by check. The purchasing department file copy is on yellow stock.

The purchase order is a three-part form, vendor's copy being on yellow stock which carries a tear-off acknowledgment. Mr. Zuck states that this has found to be much more satisfactory than merely asking the supplier for an acknowledgment. In practice, he states, the majority of suppliers mail it in after filling in the information requested. In a few cases it is necessary to follow-up the order with request for acknowledgment.

The second, or white copy of the Purchasing order, is the purchasing depart-

ment receiving slip and often the goods are in our possession for some time without the proper persons being notified. The receiving clerk has two duties, namely, to make out the usual receiving slip, and second, to notify the person indicated."

Give a Hand The Printed Way

Many Purchasing Agents are making changes in their departmental forms. The forms you have developed may save some P. A. many a "headache." Inventory and control forms and "reports to management" are of special interest right now.

The Forms Forum

Why not follow this Beeline

for multicopy printing?



Any printer who has used **INTERNATIONAL BEESWING MANIFOLD** knows where this paper gets its name. It's thin as a bee's wing—but so strong it's ideal for today's multi-copy work.

Suction fed automatics operating at normal speeds can handle this fine watermarked paper because it's smooth yet entirely free of pinholes. In addition to A-1 performance in the pressroom, this paper is equally receptive to writing or typing . . . takes erasures and rough handling, too.


These qualities—and the variety of colors—explain why **INTERNATIONAL BEESWING MANIFOLD** is a first choice for sales slips, memos, reports, specification sheets, stuffers and many air mail uses.

Even with our facilities as the world's largest maker of papers, we cannot completely fill the demand for **INTERNATIONAL BEESWING MANIFOLD**. Together with our distributors, we're doing everything possible to meet current needs. International Paper Company, 220 East 42nd Street, New York 17, N. Y.

**INTERNATIONAL
PAPERS**

*for Printing
and Converting*





*It Lifts Away
—instantly!*

**OLD
DUTCH**

**PULL-FREE
Pencil Carbon**

You don't have to tussle with this pencil carbon. It yields at a touch. Use as sharp a pencil as you wish. Bear down as hard as you like. Then finger the carbon and see it come free—quickly, cleanly. Old Dutch PULL-FREE Pencil Carbon is specially processed to prevent clinging and sticking. . . . One more feature highlighting the better quality that has characterized Old Dutch products for nearly 50 years.

ASK YOUR OLD DUTCH CUSTOMER ENGINEER

WATERS & WATERS BRANCH, 511 Locust St., St. Louis
BURLINGTON, N. J. **SAN FRANCISCO, CAL.**

**THE POST "LAB" CONTROLS
BLACLINE PRINT QUALITY**

POST LABEL GUARANTEES IT

**POST
Blacline**

POSITIVE BLACK & WHITE
WITHOUT A NEGATIVE

The clean white background; the live, sharp, jet black detail; the consistent long keeping — are all the result of careful, competent testing of paper stock, chemicals, formula and a final test on the finished coated product — available in medium and fast printing speeds; also transparent — Test Blacline today for better prints every day.

THE FREDERICK POST CO.
3650 N. AVONDALE AVE. • CHICAGO 18, ILL.

DETROIT
HOUSTON

POST
CHICAGO

MILWAUKEE
LOS ANGELES

NATION WIDE NETWORK OF POST DEALERS

(Continued from page 292)

may be used to best advantage:

Regular Finish should be used for:

1. General office and correspondence work.
2. Pica type machines with letterheads of average thickness.
3. Making from 1 to 6 clear, permanent copies at one time.
4. Operators with average stroke.

Hard Finish should be used for:

1. Smooth, glossy manifold paper.
2. Hard typewriter platens or cylinders.
3. Typewriters equipped with Elite type.

4. Operators with heavy stroke.

Extra Hard Finish should be used for:

1. Financial reports and statement work with many figures.
2. Work where copies are to be subjected to excessive handling.
3. Not more than 1 to 4 copies at one time, on heavy paper.

Dense Finish should be used with:

1. Light stroke machines and by light stroke operators.
2. Soft surface copy paper and yellow sheets.
3. Soft typewriter platens or cylinders.
4. Light weight manifold paper for 12 or more copies.

DEVELOPMENTS IN THE FOUNTAIN PEN FIELD

Eversharp is introducing the new CA Repeater pen which writes "for six months to three years without refilling," and writes in any color by merely changing cartridges. It writes on any material



The Reynolds "400" pen in styles
for both ladies and men

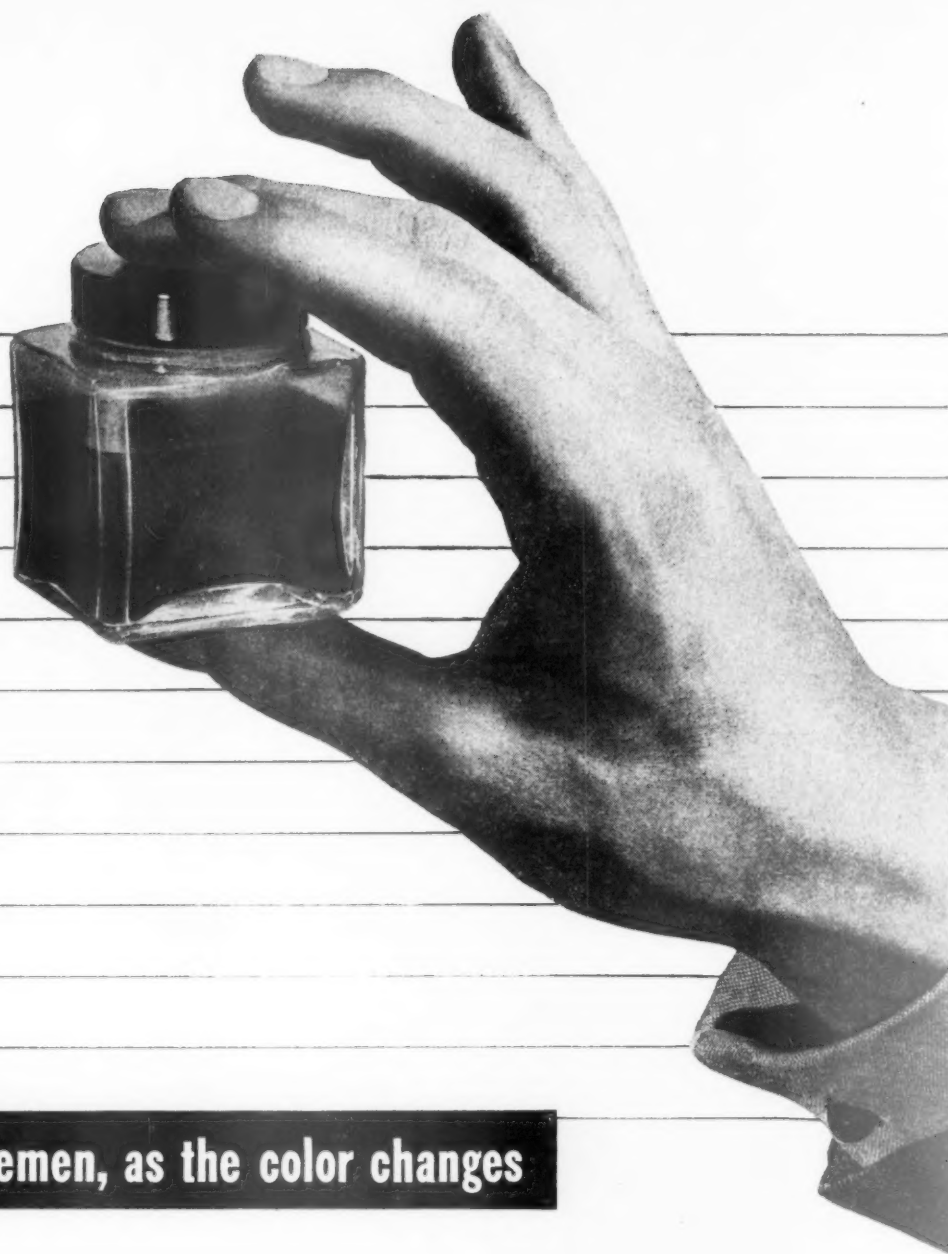
— paper, linen, other substance, and is said to "write dry when submerged under water." Also, it can be used to make six to eight carbon copies at one time.

Moore Pen Company is introducing the Moore Fingertip Pen which is featured by enclosed feed-chamber, flush mounted point, and extra long clip.

The Stratford Regency is a new \$1.00 pen for "every member of the firm — front office to office boy", which has one-stroke lever filler, large ink capacity, and "satin-glide" point.

Reynolds International Pen Company, makers of the ball-pointed pens that are guaranteed to write at least two years without refilling, has purchased building

(Continued on page 298)



Now watch, gentlemen, as the color changes

This one's an old favorite. Now it's red ink and now it's *black*.

Fact is, the difference between monthly red and monthly profit is sometimes simpler than it seems. Changes in the business forms, an outside look at an inside system, and economies mount on up dollar by dollar by dollar.

Moore Business Forms, Inc., is called on time and again to see how overhead can be pared, overtime eliminated, confusion in inter-office-routine transformed into order.

Moore studies one form or many, suggests changes and combinations, and then supplies the forms. Results are written in black.

No corner store is too small, no corporation too great, to profit by Moore service. For information, get in touch with the nearest Moore division, as listed below, or its local office. *Moore stands ready to supply you with everything from a simple sales book to the most intricate multiple-copy form.*

AMERICAN SALES BOOK CO., INC., NIAGARA FALLS AND ELMIRA, N. Y.
 PACIFIC MANIFOLDING BOOK CO., INC., EMERYVILLE; LOS ANGELES, CALIF.
 GILMAN FANFOLD CORP., NIAGARA FALLS, N. Y.
 COSBY-WIRTH MANIFOLD BOOK CO., MINNEAPOLIS, MINN.
 MOORE RESEARCH & SERVICE CO., INC., NIAGARA FALLS, N. Y.
 SOUTHERN BUSINESS SYSTEMS, INC., ORLANDO, FLA.
 MOORE BUSINESS FORMS, INC. (New Southern Div.), DALLAS, TEX.; ATLANTA, GA.
 In Canada—Moore Business Forms, Ltd., succeeding Burt Business Forms, Ltd., Toronto
 Western Sales Book Co., Ltd., Winnipeg and Vancouver
 National Sales Check Book Co., Ltd., Montreal

MOORE BUSINESS FORMS, INC.

WHAT'S THE LIFE OF AN INSURANCE POLICY?

10 years? ... 20 years? ... a lifetime?
And the paper must be as white ... the
printing as legible as the day it was
issued. Ask your printer how you can
be sure of this kind of permanency for
every type of document. Paper is his busi-



ness—he knows it intimately. As an expert he
will almost certainly call your attention to

**Rising
Parchment**

- ✓ 100% rag ✓ Super Opaque ✓ 4 weights
- ✓ Distinctive unglazed parchment finish

When you want to **KNOW** ... go to an expert!

*Rising
Papers*

Rising Papers

Ask your printer ... he **KNOWS** paper!

Rising Paper Company, Housatonic, Mass.



**UTILIZED by the
BUSIEST
PURCHASING AGENTS**

**MacRae's
Blue Book**

A DIRECTORY OF AMERICAN INDUSTRY ... FOR ADVERTISING AND BOOK
RATES, CALL YOUR AGENCY OR WRITE ... 26 E. HURON ST., CHICAGO 11, ILL.

(Continued from page 296)

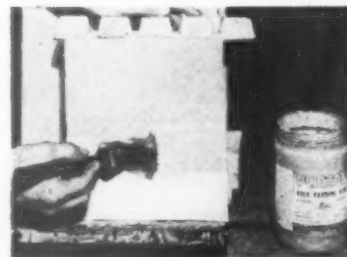
and land at 1550 North Fremont St., Chicago, for manufacturing purposes and plant expansion.

A pen guaranteed to write four years without refilling was recently introduced by the Reynolds International Pen Company of Chicago. The four-year ink supply guarantee is double that made by the company for its first pen, the pen utilizing a new printer's type ink which is said to make for increased legibility, smoother writing and easier flow. It is known as the Reynolds "400."

1 1 1

COLD PADDING GLUE PERMANENTLY FLEXIBLE

Cold padding glue said to have permanent flexibility is being marketed by Paisley Products, Inc., Chicago 16, Ill. Trade name of this product is Pliatab Cold Padding Glue. The raw material is a plastic resin, and the use of certain plasticizing agents is said to overcome



Pliatab glue can be applied by hand brush

crystallization, hardening and brittleness, and also to impart greater covering qualities. According to the manufacturer, one gallon will cover 200 sq. ft. of padding area. The compound can be applied by hand brushing or spray gun and is available in red and white (natural) colors.

1 1 1

DIEBOLD ELECTS OFFICERS

At meeting of new board of directors immediately following the annual stockholders meeting, the following officers were named to lead Diebold, Inc., Canton, Ohio, for the ensuing year: Eliot Ness, chairman of the board of directors; George H. Bockius, president; Daniel Maggin, vice president; A. W. Jackson, vice president in charge of sales; Lyman H. Clark, vice president in charge of industrial relations; John P. Paca, vice president in charge of product engineering; John E. Raber, vice president in charge of production; Raymond Wyer, treasurer; Loren E. Souers, secretary; John W. Kemper, assistant treasurer and assistant secretary.

Mr. Bockius repirited that the corporation entered 1946 with a backlog of orders for regular commercial products equal to the volume of special war work produced in 1945. Following V-J day it was necessary to revamp the entire plant

(Continued on page 300)



Copyright 1946, L C SMITH & CORONA TYPEWRITERS INC SYRACUSE 1 N Y

...which typewriter?



SPEED, reliability. Qualities of a great daily . . . and these typewriters. In newspaper offices all over the land Smith-Coronas take a pounding from reporters, re-write men, feature by-liners. They stand up well, with the same freedom from breakdowns that has served industry through heavy-pressure years.

For the needs of manufacturing, transportation and business, more and more new Smith-Coronas are becoming available . . . machines that give promise of surpassing even the "old-timers'" rugged performance.



Smith-Corona

Makers also of
Smith-Corona Portables



Prominent Users of Strathmore Letterhead Paper: No. 67 of a Series



what would field research say about *YOUR* letterhead?

A young company that gets around, James O. Peck Company, two years old, covers the country with thorough-going surveys in industrial field research. The Peck Company makes it their business to know the *WHY* of sales acceptance by getting the *customers'* viewpoints and practices. Actual conditions to be met in the prospective market are thus the basis for marketing and sales counsel.

The James O. Peck Company are represented by competent personnel...and an effective letterhead on Strathmore Paper. You, too, should use a quality letterhead that says *competence* for your company. The Strathmore watermark is your assurance of quality.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Strathmore Bond, Thistlemark Bond, Bay Path Bond, Alexandra Brilliant.

STRATHMORE MAKERS OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

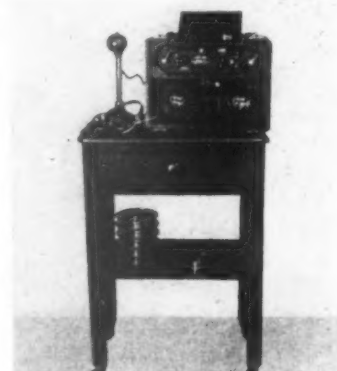
(Continued from page 298)

facilities which had been 98% devoted to the building of special war work. Plant reconversion is now completed.

1 1 1

FILMGRAPH OFFICE DICTATOR

The accompanying illustration shows filmgraph Model HM office dictating machine announced by the Miles Reproduser Co., Inc., 812 Broadway, New York, N.Y. It is housed in a cabinet with front and back removable doors. Overall dimensions are 13 $\frac{3}{4}$ " deep, 14 $\frac{3}{4}$ " wide, 10" high. Doors are removed when the unit is in use. The model is equipped with an electro-magnetic head which serves the dual purpose of recording and reproducing by means of a diamond point stylus. One hundred sound tracks are indented across the width of the film, a numbered dial automatically showing the number of the track on which a record-



Filmograph Model HM is housed in a cabinet with front and back removable doors.

ing or play-back is located. There is also a counter which indicates the footage of film on which recording or playback is made.

The film is carried on plastic reels. Recording is made longitudinally on the film, and the period of recording on a single sound track is approximately 20 minutes. An audible signal warns the operator when the end of the sound track is reached, and the film is re-wound electrically.

The film is light in weight, and recorded films are readily mailed. The amplifier has sufficient power so that a recording can be played back through loud speakers to broadcast to a group in a room, if desired.

1 1 1

HOW MUCH SPACE DOES OFFICE WORKER NEED?

How much floor space does the average office worker need?

From 60 to 75 square feet, according to the Wood Office Furniture Institute. If less space is given, the office becomes crowded and the work is likely to be affected adversely.

Experience has also indicated that aisles between desks should be at least

(Continued on page 302)

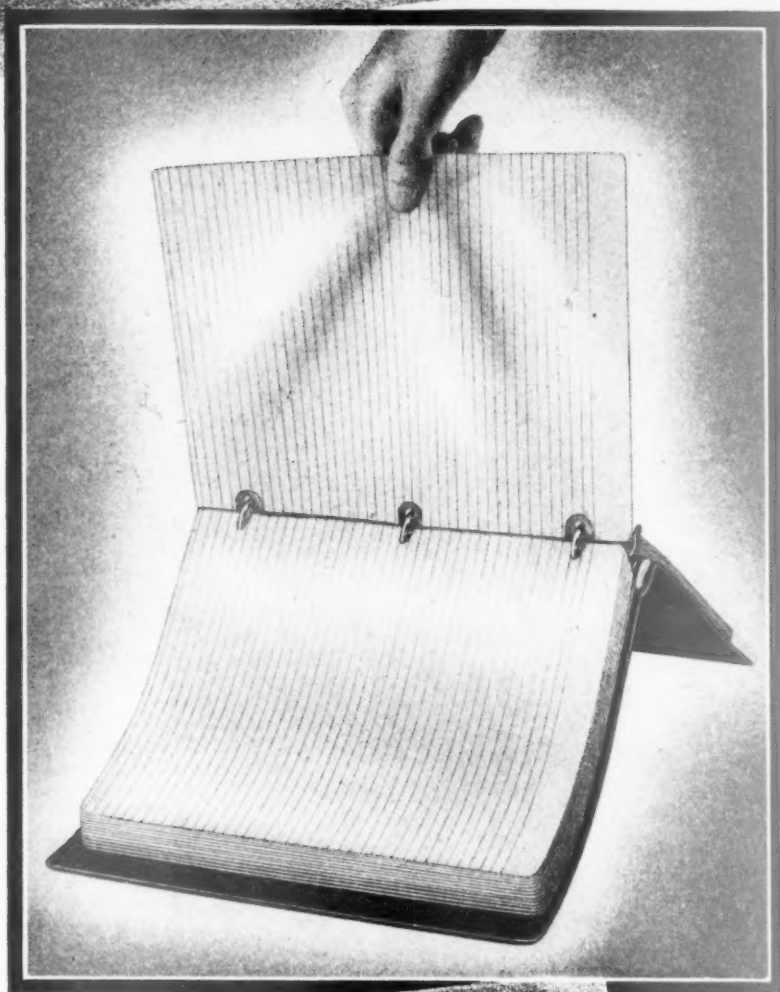
ONLY National MAKES Metal-Holed Ring Book Sheets

**Back again . . .
ready to battle wear . . . are
National Metal-Holed Sheets!**

Their copper reinforcements bonded fast to the paper keep the sheets from wearing out at the holes . . . do away with all possibility of loss for valuable data and important information.

You can use National Metal-Holed Sheets just like other sheets . . . no unpleasant bulking . . . no matching in special sets. All reinforcing is at the holes where it belongs. Sheets lie perfectly flat and are not affected by atmospheric changes.

Available in both "Eye-Ease" and white paper in a variety of sizes and rulings to meet every requirement.



Reinforcements ride the rings without fraying . . . go readily through typewriter or mimeograph.



ASK YOUR STATIONER

NATIONAL BLANK BOOK COMPANY

HOLYOKE, MASSACHUSETTS

NEW YORK

CHICAGO

BOSTON

SAN FRANCISCO



Yes! It's the "whitest white" in Hammermill history!

We invite you to do a little "shopping" before you specify the paper for your next order of letterheads.

We want you to see the snow white of the new Hammermill

Bond and compare it with other white bonds. You'll be surprised how many "shades" of white there are! You'll agree that your letterhead on this bright, glare-free Hammermill white will take on a new clean snap, impressiveness and dignity.

SEE FOR YOURSELF! SEND FOR THIS . . . Make the comparison in your own office. Send for the sample book of NEW Hammermill Bond showing the NEW white—and also 14 pleasing, sharply defined colors for letterheads and forms. Just mail the coupon.

LOOK FOR THE WATERMARK . . . IT IS HAMMERMILL'S WORD OF HONOR TO THE PUBLIC

HAMMERMILL BOND

Companion papers for office use include Hammermill Mimeo-Bond and Hammermill Duplicator

Hammermill Paper Company, 1461 East Lake Road, Erie, Pennsylvania

Please send me—FREE—the sample book of Hammermill Bond showing the NEW white and the 14 distinctive colors.

Name _____ Position _____

(Please attach to, or write on, your business letterhead) PU-MA

(Continued from page 300)

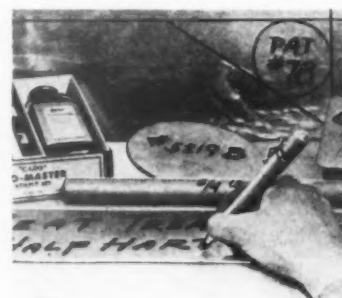
three feet wide, and that when two desk workers sit back to back, there should be a four foot leeway between the chairs.

Laying out an office so as to bring about greatest comfort to workers and smooth flow of work requires much thought and study. By careful planning such seemingly simple things as the arrangement of work on the top of the desk, needless motions and effort can be eliminated.

1 1 1

POCKET-SIZE FOUNTAIN BRUSH

Pocket aluminum "fountabrush" for all-purpose marking on any surface, which utilizes hard felt pointed nibs, is announced by the Cushman & Denison Mfg. Co., 133 West 23rd Street, New York, N. Y. It is no larger than ordinary fountain pen, and maker states it can be used for marking any surface such as



"Fountabrush" can mark any surface.

wood, paper, glass, cellophane, rubber, wet or dry surface, hot surfaces up to 450 deg. F., using a wide range of instant drying marking colors which are said to be weatherproof and permanent. It has an automatic control valve that feeds marking color by slight pressure.

1 1 1

RANDOM THOUGHTS ON DESKS

Statistics show that the average American is growing taller, according to the Wood Office Furniture Institute. The Institute is watching statistics on stature to develop designs for desks and chairs so as to provide comfort to tall as well as short office workers with a minimum of mechanical adjustments of office equipment.

Modern flat-top desks reflect the spirit of modern business. Smooth, expansive tops were designed to expedite the flow of correspondence and records required in today's offices.

Improper organization of the interior of desk drawers may result in many unnecessary motions. Standardized arrangement minimizes motions wasted in searching, and lessens possibility of neglecting important papers carelessly filed in drawers.

There was a 157 per cent increase of office space used in Manhattan alone

from 1921 through 1943, according to the Wood Office Furniture Institute.

Average height of desk tops is 30 inches; office chair seats, 18 inches, according to the Wood Office Furniture Institute. Many chairs are now adjustable and some makers plan to have desk heights adjustable, too.

Swivel chairs have been in use for more than four centuries, according to the Wood Office Furniture Institute.

1 1 1

SPEND BIG PART OF LIFE AT DESK

The average American spends years of his life at a desk. With the expansion of free schools most children now spend the first decade of their active life at desks in school, points out the Wood Office Furniture Institute. Many children go on to high school and college, each of which adds four years of desk work.

With the development of modern business more and more of the population have become desk workers. It is estimated that there are about 5,000,000 clerical workers in the United States besides several million business, professional and other people who spend part of their time at desks. There are also desks in millions of American homes.

(Continued on page 304)

NEW... IMPROVED... ELECTRONIC to meet today's dictation needs

The New Dictaphone Cameo Model Electronic Dictating Machine

In cabinet, stand or desk-top position, this Dictaphone Electronic dictating machine provides all the exclusive advantages of the popular Dictaphone Cameo *plus* electronic recording.



ON YOUR DESK, or in convenient floor stand or cabinet, the new improved Dictaphone Cameo Electronic dictating machine will speed reconversion and expedite your peacetime business.

You simply talk your notes, ideas and instructions to a small, lightweight, hand microphone which also acts as a loudspeaker for listening back. Sensitive voice pick-up and electronic recording enable you to speak in a low conversational voice, even in noisy surroundings. By means of an adjustable volume control, the recording can be strengthened or softened for easy transcription by your secretary.

Because her presence is not required during dictation, she is left free to protect you from interruptions and to do other important work for you. Result: you both can get more done—quicker and with less effort.

Why not investigate Dictaphone Electronic Dictation for your office? Consult your local phone book, or write for free descriptive literature Dictaphone Corporation, 420 Lexington Avenue, New York 17, N. Y. In Canada: Dictaphone Corporation, Ltd., 86 Richmond Street, W., Toronto 2, Ontario.

DICTAPHONE

Electronic Dictation

The word DICTAPHONE is the registered trademark of Dictaphone Corporation, makers of Acoustic and Electronic dictating machines and other sound recording and reproducing equipment bearing said trade-mark.

Old Town



**RIBBONS
CARBONS
Duplicating
Supplies**

*For those
who prefer the best*

BROOKLYN 17, N. Y.



*in letterhead
paper*

THE WATERMARK
IS YOUR
quality guarantee

• Yes, here's your guide to buying prestige-building letterhead paper.

You'll be safe if the watermark reveals the answers to these three questions because the finest papers are made from cotton fibres . . . the more cotton fibre, the finer the paper. Finally, it should reveal who made it . . . like Fox River, who has been making fine cotton fibre papers since 1883.

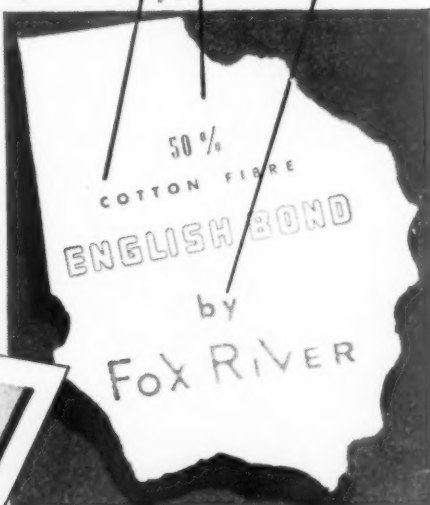
For instance, our English Bond is watermarked as illustrated. It's a beautiful paper for letterheads, forms, envelopes and any business contact papers or outgoing mail.

Ask your printer, lithographer or engraver about Fox River papers. He'll be glad to recommend the paper with the correct cotton fibre content for each business need.



BE SURE
IT SAYS
3 THINGS

- 1 Does It Contain Cotton Fibre?
- 2 How Much Cotton Fibre?
- 3 Who Made It?



25% TO 100% COTTON FIBRE
BOND, LEDGER, ONION SKIN

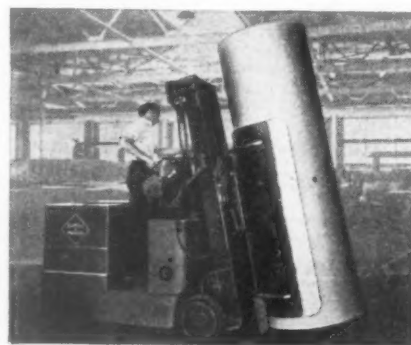
FOX RIVER PAPER CORPORATION
403-E So. Appleton Street Appleton, Wisconsin

LONG ROLLS EASILY HANDLED

Long cylindrical objects such as rolls of newsprint paper are handled quickly and economically by means of power industrial trucks developed by the Elwell-Parker Electric Co., Cleveland.

These are standard-type, battery-driven trucks with attachments for gripping and manipulating their loads. A roll of paper weighing up to 2 tons can be tilted forward or backward, elevated and rotated. The truck itself can transport the roll forward, backward or sideways. All movements are controlled by means of levers in front of the operator.

At the base of the semi-cylindrical steel cradle in which the load is handled is a chisel-type fork, or a blade. When the truck operator desires to pick up a roll of paper in a vertical position the fork or blade is pushed forward under it. Roll is held securely in the cradle, which is then tilted backward by means of the truck's upright column, lifting the roll off the floor for transport. For releasing it in a vertical position it is tilted forward until part of the roll's weight rests



Long rolls are easily handled

on the floor. The truck then backs up freeing the roll from the cradle and withdrawing the fork. The cradle is adjustable for various diameters of rolls.

The rotating device on the upright column enables the truck operator to pick up or put down a roll similarly in a horizontal position. Elevating mechanism in center of upright in this model permits operator to raise the roll for stacking horizontally, or to remove it from a stack of rolls. Rolls as shipped from mills generally are padded with coarse paper to prevent damage in handling operations.

1 1 1

NEW, COMPLETE MECHANICAL PACKINGS MANUAL

Graton & Knight Company has published a new book on the selection of mechanical packings types, their application and the design of adjacent parts in hydraulic or pneumatic equipment. The primary purpose of the manual is to outline the basic principles which influence packings life and resultant machine performance.

Both leather and synthetic rubber packings are discussed and operating condi-

tions governing the selection of material are enumerated. Illustrations include over one hundred drawings of packings design and application and many photographs of successful installation, causes of packings failure and their remedies, etc. There are nearly fifty reference tables which are included to save time-consuming calculations.

This 336 page Mechanical Packings Manual is adequately indexed to lead the design engineer from the selection of the type of packing to its installation in a correctly designed recess. It is bound in genuine leather to withstand constant usage. Price—\$4.50. Graton & Knight Company, Worcester 4, Massachusetts.

1 1 1

SPECIAL CRATES REDUCE DAMAGE AND SHIPPING WEIGHT

A new method of shipping bathtubs, which reduces shipping weight and damage losses to a minimum, has been announced by the Trenton Potteries Co., Trenton, N. J., subsidiary of Crane Co.

Special wirebound crates, scientifically engineered to carry the Crane "Duraclay" tubs, in the past few months have reduced shipping weight by more than one ton per car, and have cut shipping damage losses very materially, according to company officials.

The tub, which weighs about 275 lbs., is entirely floated in a wirebound crate which weighs 50 pounds as compared to
(Continued on page 306)



A good rule for P.A.'s

There's only *one* carbon paper with a numbered scale. It's called Webster's Micrometric — and it helps secretaries in business offices from coast to coast to turn out more evenly spaced letters and reports. Saves time, too.


This exclusive feature is typical of the extra values offered by F. S. Webster Company. That's why it's a good rule for P. A.'s to get in touch with Webster, whenever you need carbon papers and typewriter ribbons; duplicating carbon papers and accessories; carbon paper ribbons for photo-offset work; ribbons and carbons for Elliott-Fisher, Addressing, Adding and International Business Machines. Consult your nearest dealer or write to F. S. Webster Co., 7 Amherst Street, Cambridge 42, Massachusetts.

WEBSTER'S

**Micrometric Carbon Papers
and Typewriter Ribbons**



**Better Envelopes
for Every Business Use**



**METAL CLASP ENVELOPE
FOR MAILING, PACKAGING, FILING**

TENSION ENVELOPE CORP.

FIVE FACTORIES
SELLING DIRECT TO THE USER

New York 14, N. Y. • Minneapolis 15, Minn.
St. Louis 3, Mo. • Des Moines 14, Iowa
Kansas City 8, Mo.

(Continued from page 305)

the former type of container used which had a tare weight of 90 pounds for the smaller size tub. Fewer excelsior pads are used in the new method of packing, and these merely for protection to the finish.

Wide center "belly-band" cleats incorporated into the design of the crate strengthen the container at vulnerable points, and diagonals prevent weaving of the crate.

1 1 1

ALUMINUM SCRAP PRICE REDUCTIONS ANNOUNCED

The War Assets Administration recently announced reduction in the minimum price of certain classes of aluminum scrap which remove some inequities in the disposal of this material.

Action was taken in an amendment to SPA Regulation 12 and followed conferences with advisory committees of aluminum smelters and dealers.

Under the amendment, the minimum sale price for Class D aluminum scrap is reduced from 4 cents to 2½ cents per pound. This type of scrap which includes solids mixed with foreign materials was often found to include items contaminated which prevented free movement.

Aircooled engine cylinder heads with steel cylinder barrels attached, originally included in Class D, were removed and

placed in a separate Class F, at a minimum price of 2 cents.

To facilitate movement of small lots of the several grades, the amendment provides a minimum price of ½ cent per pound less than the established price where the lot available for sale at any one place is less than 30,000 pounds.

The minimum prices for various grades of aluminum scrap are now as follows:

a) Pig or ingot resulting from melting of obsolete or wrecked aircraft, 6¢.

b) Segregated solids (plant or production scrap or any other solids consisting of only one alloy and so identified); Pure cable (clean and free of iron); Foil (clean and new), 6¢.

c) Mixed solids (plant or production scrap consisting of an unknown alloy or consisting of more than one alloy; Obsolete castings and forgings (alloy unknown or not segregated); Obsolete pistons (alloy unknown or not segregated); Any other clean solids free of all metal other than aluminum, 5¢.

d) Solids mixed with foreign materials (any scrap, other than as defined in paragraphs (e), (f), and (g) which is contaminated by or mixed with foreign materials.) This may include smaller airframe and engine parts, 2½¢.

e) Prepared aircraft scrap (not including engines or engine parts) recovered from wrecked, crashed, obsolete, or uncompleted airframes cut or sheared into pieces approximately 48" x 60" x 24" or less and shipped in 30,000 lb. minimum cars, 2½¢.

f) Air cooled engine cylinder heads with steel cylinder barrel attached, 2¢.

g) Wrecked, crashed, obsolete or uncompleted airframes, or major structural segments of such airframes to be scrapped (without preparation of any kind), 1¼¢.

1 1 1

WHAT INFORMATION IS WANTED?

The Office of the Publication Board and the War Department are about to begin a complex and difficult operation—the selection and the microfilming in Germany of data that may be valuable to American science and industry. John C. Green, executive secretary, Office of the Publication Board, Department of Commerce, Washington, D. C., states that there are many tons of documents to review, and while it is known that they contain priceless information, it is impossible for any government agency to determine what items may be of value to some specific American business or research group. Therefore, Mr. Green states, the Publication Board is seeking information from industries and scientific groups as to what specific information should be sought. Qualified technicians in the chemicals, automotive, machine tool, fuel and lubricant, textile, shipbuilding, scientific instruments and other fields are also wanted.

Arrangements can be made for any industry or scientific group interested in specific methods, and able to assign personnel, to visit Germany.

Weldon Roberts Erasers

FOR INK — PENCIL — TYPEWRITING
SMOOTH AWAY THESE OFFICE "WORRIES"



NO. 900 SUEDE
Soft gray texture, modified octagonal shape.
A typists' favorite.

NO. 9000
SUEDE "Whisk"
The 900 suede eraser with a new style brush.

Part of the complete quality line of
Weldon Roberts Erasers

Correct Mistakes in Any Language

WELDON ROBERTS RUBBER CO.
Newark 7, New Jersey

At All Stationers

You can buy fine

DIAMONDS

with Complete Confidence
from L. & C. MAYERS CO.



*Selections sent for inspection
without obligation.*

L. & C. MAYERS CO.

Diamond Merchants since 1912

545 FIFTH AVENUE, NEW YORK 17, N.Y.



"Mr. Brown has gone for the day!"

Yes, it's only five o'clock.

Mr. Brown is a very important man.

But he has gone home.

His work is all done.

His desk is clean.

Mr. Brown has learned the secret of managing time to his own advantage.

* * *

Today thousands of top executives multiply their accomplishments with the help of the Edison Electronic VOICewriter. And in thousands of small businesses, even one man businesses, men in owner-

ship or management positions have found a way to do more in less time and with less effort.

The Edison Electronic VOICewriter frees the executive of dependence upon a secretary to take his dictation. He can dictate at any time, at his own convenience, at his own speed. He can organize his work around his time alone whenever ideas come to him.

Work speeds out of his way faster. His accomplishment is stepped up with no increased effort while his secretary also acquires a new command over time, a new opportunity to increase her value to her employer and herself.



Mercury Model Edison Electronic VOICewriter for dictation only, occupies no more space than a business letterhead. Electronic microphone records with lifelike accuracy in any volume from a whisper up.

EDISON VOICewriter Ediphone

Thomas A. Edison, Inc., West Orange, N. J. (In Canada, Thomas A. Edison of Canada Ltd., 2931 Adelaide St. West, Toronto 1, Ont.)



Fingertip Control or Desk Microphone, optional with Director (floor) Model illustrated above, adaptable for recording conferences, interviews and telephone conversations as well as dictation.

See the complete Ediphone and Edison Electronic VOICewriter exhibit at Booth No. 78, Stevens Hotel, Chicago, Ill., May 27th, 28th and 29th

PERSONALITIES *in the* NEWS

Hugo A. Puls has been appointed Director of Purchases and Traffic for The Ingalls Iron Works Company and the Ingalls Shipbuilding Corporation with headquarters at Birmingham, Ala. Mr.



Puls joined the Ingalls organization in 1923 as assistant traffic manager and in 1924 became manager of the order and traffic departments. In his new capacity he will be in charge of purchases at Birmingham and Decatur, Ala. He will continue in charge of traffic at Birmingham, Decatur, Ala., Pascagoula, Miss., and Verona, Pa.

David S. Hoddock, Purchasing Agent of the A. B. & W Transit Company of Virginia, Alexandria, Va., member of the Purchasing Agents Association of Washington, D. C., has been elected a director of the Alexandria Hospital.

Irwin A. Rose has been elected vice president in charge of manufacturing of The Matag Company, Newton, Iowa. Previously he held a similar post for the past four years with the Edison General Electric Appliance Co., Inc., Chicago. Mr. Rose was associated with the Chicago GE subsidiary for more than 23 years in various capacities, ranging from time study man and shop foreman



up through Director of Purchases and Production and factory manager, to the post he has resigned. He is a graduate of the Northwestern University School of Commerce.

Walton Klages, recently separated from the army, has resumed his former position as Purchasing Agent for the Richfield Oil Corporation of New York. While in the service, he was Executive Officer for the Property Disposal Division, Office Chief of Transportation, Washington, D. C.

Douglas F. G. Eliot, General Purchasing Agent in charge of purchasing and traffic for the Western Electric Company, was elected a vice president of the company at a meeting of the board of directors, on April 9.

As general purchasing agent for Western Electric during the war years, Mr. Eliot was responsible for the procurement of all raw materials, supplies and equipment required by the Company in supplying more than \$2,000,000,000 worth of electronic and communications equipment for the Armed Forces. In addition Mr. Eliot supervises the purchase



of material supplied by Western Electric to the Bell System.

A graduate of Yale with an A. B. degree in 1909, Mr. Eliot joined Western Electric Company two years later at New York. His early experience in the Company covered various assignments in this country and abroad, and in 1926 he became division purchasing agent for the Company in New York. In November, 1929, Mr. Eliot was appointed personnel director, and in 1937 general commercial manager. Two years later he was appointed general purchasing agent and in 1942 the supervision of the Company's traffic department was added to his duties.

Mr. Eliot is a member of the Alumni Board of Yale University and chairman of the scholarship committee, Yale Alumni Association of Bergen County. He is a member of the Bankers' Club of America, and of Englewood Field Club, Knickerbocker Country Club, and Englewood Club, Englewood, N. J. He was a member of Squadron "A," New York State National Guard, 1915-1916, and served in the U. S. Army in 1918.

Frank B. Baker has been elected vice president of Pullman-Standard Car Manufacturing Co., Chicago, Ill. Mr. Baker, in Charge of Purchases for all plants of the company, began his career



in the railroad equipment business in 1912, leaving a position in the shops of the Michigan Central railroad to become record clerk in the Haskell & Barker carbuilding plant at Michigan City. Here he rose from record clerk through several stenographic positions, to Assistant Purchasing Agent and at the time of the merger of Haskell & Barker with the Pullman Car & Manufacturing Co. in 1922, came to the Chicago plant where he was named Supply Agent. In 1934 Mr. Baker was named General Purchasing Agent of the Pullman-Standard Car Manufacturing Co. with offices at the Car Works division. He is also a director in the Pullman Trust & Savings Bank which serves the entire Roseland-Pullman district on Chicago's south side.

Louis J. Redmond was appointed Director of Purchases for Oregon Woodwork, Ltd., Portland, Oregon, in November, handling purchases for the millwork plant at Portland, the moulding plant at Redding, Calif., and the sawmill at

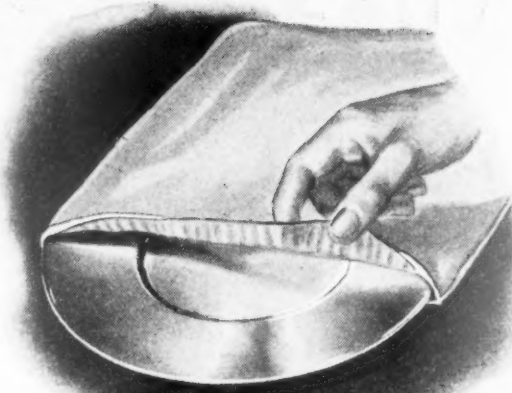


Forbestown, Calif. He was purchasing agent for H. Ehrlich & Sons Mfg. Co., St. Joseph, Mo., from 1929 to November 1941, when he joined the J-M Serv-
(Continued on page 310)

Kimpak^{*}

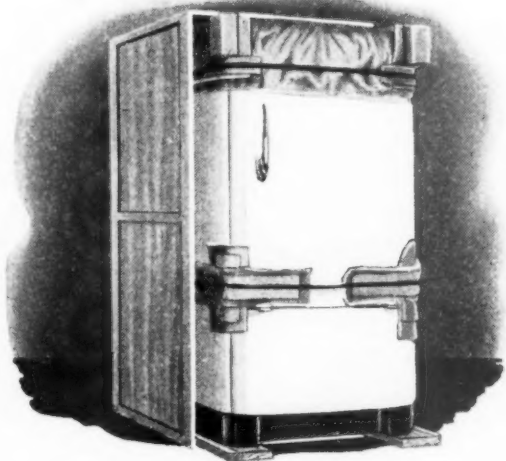
Float

Packaging



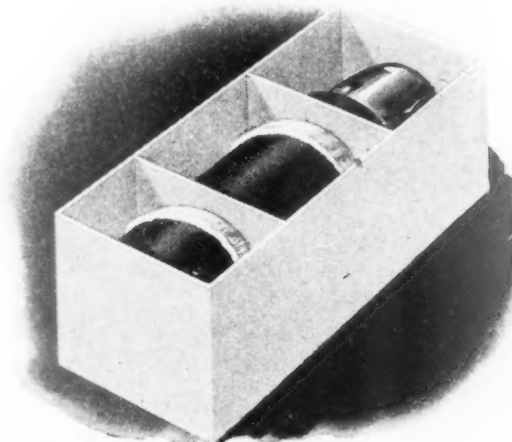
★ Protects Against Abrasion

KIMPAK—soft, resilient and clean—safeguards highly polished surfaces and delicate finishes against rubbing, scratching and press-marking. Also, neutral KIMPAK types protect the product from direct contact with chemically active packaging materials. From luxury merchandise to precision-finished parts, products ship better in KIMPAK.



★ Cushions Jars and Jolts

KIMPAK Creped Wadding absorbs shocks more effectively than most cushioning materials of far greater density and thickness. Because of its compactness, it often cuts bulk and weight of packages, reduces shipping charges. KIMPAK helps make your package as modern as your product.



★ Supplements Other Packaging Materials

Where steel bands, paper board separators, wooden interior bracing or other rigid packaging materials must be used, KIMPAK supplements them with cushioning and surface protection properties. It's muss-free, as easy to handle as wrapping paper, saves time and money in the shipping room.

An illustrated booklet on KIMPAK is now available. For your free copy, see your KIMPAK Distributor or mail a postcard to Kimberly-Clark Corporation, Creped Wadding Division, Neenah, Wis.

*KIMPAK (trade-mark) means
Kimberly-Clark Creped Wadding

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPED WADDING

A PRODUCT OF
**Kimberly
Clark**
RESEARCH



ALLEN
FLAT HEAD
CAP SCREWS

EXPANDING
range of applications
FOR DEPENDABLE FLUSH FASTENINGS

Perfect countersink-fit; positive wrenching

Think of the uses you can make of these newly-developed advantages in flush fastenings:

- (1) Flush top surface with no gap between screw head and surrounding metal.
- (2) Extreme rigidity of grip, because angle of head helps lock screw in place by drawing down on a conical surface.
- (3) Firmer hold on thin plates of metal, by more binding surface under the head than in fillister type or cheese-head screws.
- (4) Shallower countersink — less weakening of metal — when used for fastening a relatively thin plate.
- (5) Positive engagement of hex key transmits power for tightest of set-ups without slipping, reaming or side play.
- (6) Maximum strength of screw itself assured by "pressur-forming" of special-analysis ALLENOY steel. Threaded to a high Class 3 fit.
- (7) Speed in assembly provided for by use of Allen hand drivers and key blades for power drivers.

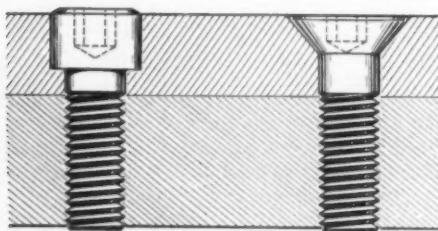


Diagram at left shows how flush surface is achieved with shallow countersink as compared with ordinary socket head cap screw. Note more binding surface under the head than is had with a fillister or cheese-head type. Angle helps lock screw in place by drawing down on a conical surface.

Order of your local ALLEN Distributor, — or ask him for samples and engineering data for preliminary try-out. Get proof that these screws perform as dependably as Allen Hollow Set Screws and Socket Head Cap Screws.



THE ALLEN MANUFACTURING COMPANY
HARTFORD 1, CONNECTICUT, U. S. A.

(Continued from page 308)

ice Corporation (a subsidiary of Johns-Manville Corporation) to handle the purchases of production materials for their shell and bomb loading plant, the Kansas Ordnance Plant, Parsons, Kans.

Barclay E. Mackinnon has returned from military service to the post of General Purchasing Agent for the New York Quinine & Chemical Works, Inc., Brooklyn, N. Y. Mr. Mackinnon joined the Army in 1942, at which time he was Assistant Purchasing Agent in charge of export sales. At the end of the war in Europe he was a Platoon Commander in the 23rd Cavalry Squadron.

C. L. Miller has been named Purchasing Agent for The American Welding & Manufacturing Co., Warren, Ohio. He has been engaged in procurement work



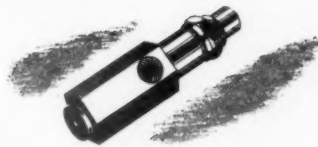
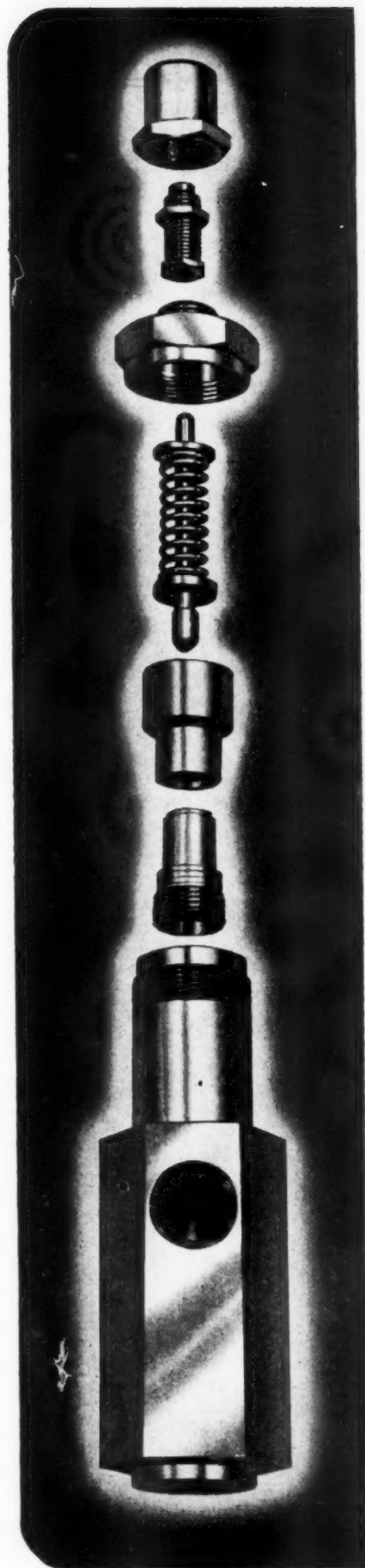
for 14 years in the purchasing and stores divisions of public utilities and transportation companies. His only departure from purchasing was for a four-year period when he acted as general manager of Penn-Ohio Coach Lines Company at Youngstown, Ohio.

Roland M. Brennan, Purchasing Officer, District of Columbia, Washington, D. C., has been appointed by the Commissioners of the District of Columbia to serve on a city wide food conservation committee, looking to food conservation in District hospitals and institutions. Last year, food purchases amounted to over a million dollars.

A. J. Goddard, Jr., a Purchasing Agent for the Armstrong Cork Co., Lancaster, Pa., has just returned to the United States after a three-month survey in the Mediterranean area, in the course of which he visited cork growing and exporting centers in Portugal, Spain, Algeria, and French Morocco. Because of the Spanish Civil War and World War II this is the first survey of its kind that the Armstrong Company has been able to make since 1937.

W. P. Twitmire has been named Procurement Manager for the Armstrong Cork Co., Lancaster, Pa., his function being to expedite procurement of raw materials and equipment, according to announcement by General Purchasing Agent M. L. Lampe. In his new position Mr. Twitmire will be responsible for

(Continued on page 312)



What you can do with STAINLESS STEEL BARS!

Used with corrosive chemicals, this high pressure relief valve is rated to 10,000 pounds. It's made wholly from stainless bar stock... note the variety of applications. For extra corrosion resistance both seat and disc are type 316; where abrasive service is indicated, heat treated type 440C is substituted. The stem, top, adjusting screw, and cap are all turned from free machining type 303.

The spring is a story in itself. To meet service requirements, tempered stainless is cold passed 4 times through dies to a narrow range of physicals—then precisely coiled to develop a predetermined rating for pressures and overpressures.

Versatility? You have it and then some with stainless. And the quick availability of so many bar types makes it even more useful. Frasse stocks stainless in 7 different bar types alone, from type 302 to 440F. In addition to the popular 302 and 303, complete size ranges are maintained in types 304 and 316. Or, if you require, you can choose type 416—even 440C and 440C-F—right from stock, for immediate use.

You'll find it economical and convenient, when you work with stainless bars, to work from Frasse stocks. No need to carry heavy inventories, for one thing. And quick delivery on a wide choice of types for another. Call us. Peter A. Frasse and Co., Inc., 17 Grand St., New York 13, N. Y. (Walker 5-2200) 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100) 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) Jersey City · Hartford · Rochester Syracuse Baltimore

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Use this latest Frasse Inventory!

This latest Frasse stainless inventory lists over 700 items—right in stock, ready for immediate shipment to your plant. Shows actual quantities, analyses and finishes of quickly available bars, sheets, strip, plates, pipe, tubing, etc. Mail the coupon or call for your free copy today!

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Stainless Steels and Tubing

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Gentlemen:


Please send me your inventory of stainless steels immediately available from Frasse stocks.

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AMES *Shockless*




Hundred Series

DIAL INDICATORS

For tough jobs, where hammer-like blows at the spindle end break down ordinary indicators, AMES Shockless Indicators stand up and give uninterrupted service. The addition of a simple shock-absorber to the wheel assembly protects the gear train without changing the outside dimensions or appearance. Unlike any other indicator cushioning device, it is absolutely effective, does not reduce accuracy or sensitivity and saves repair expense.

Try some of the various sizes and models on your most punishing testing jobs and see how they will keep on checking fractions of the thousandth inch just as accurately after being pounded and jolted severely.



B. C. AMES CO.
WALTHAM, MASS.

(Continued from page 310)

organizing and supervising all the expediting activities of the Purchasing Department and for supervising the department's clerical section. Mr. Twitmire joined the Armstrong organization in 1935. Previously he was assistant director of the bureau of merchandising.

William C. Foster, vice president of the Pressed & Welded Steel Products Co., New York City was presented with the Medal for Merit, the Government's highest civilian award, for his services in the wartime purchasing program of the War Department, by Brigadier General Guy H. Drewry, Director of Procurement, Army Service Forces. During the war, Mr. Foster served as Director of the Purchases Division and as Assistant Director of Material, Army Service Forces; and as the Special Representative of the Under Secretary of War. He was responsible for policies on place-



Brig. Gen. Guy H. Drewry presents Medal of Merit to William C. Foster.

ment of contracts and negotiation of prices for all purchases of the War Department, and approved personally all procurement contracts for more than five million dollars. The citation, signed by President Truman, read as follows:

"William C. Foster, for exceptionally meritorious and distinguished service to the War Department in the performance of duties which contributed materially to the success of the war effort. Through his deep understanding and unusual ability, many of the more important procurement problems were solved. In his responsibility for the policy and procedure for pricing war contracts, he, perhaps more than any other one man, was responsible for savings to the Government that totalled many billions of dollars.

"His ability to handle a constant flow of complex, difficult, and important assignments pertinent to the Purchases Division of Headquarters, ASF; resulted in the smooth and effective functioning of that Division, on whom the responsibility for procurement for the greatest armies in history rested.

"Because of his sound judgment, extraordinary tact, and forthrightness in dealing with contractors, despite efforts to obtain the closest prices, he not only gained for the War Department their good will and cooperation, but increased

(Continued on page 314)

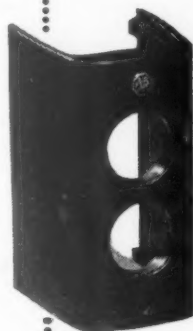
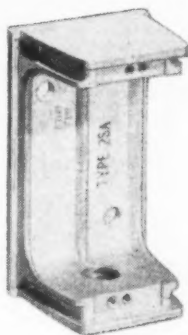
Case Histories from the RICHARDSON files

PRODUCT REDESIGN

Problem: Redesign intricate push-button switch parts. Parts must have good insulating properties, permanency of finish and appearance.

Solution: Molded INSUROK—because it can be precision molded into practically any form—makes available many new design and structural possibilities. Threads, holes, trade-marks—can be molded right into INSUROK parts and no further finishing is required after molding.

Whether you are designing a new product or redesigning a present one—let *Richardson Plastics* help you. They are highly trained in the proper use of INSUROK Precision Plastics, and will show you new ways to higher profits and greater satisfaction. Write today!



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Allen-Bradley Co.

INSUROK *Precision Plastics*

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DETROIT: 6-252 G. M. BUILDING, DETROIT 2, MICHIGAN

Factories { MELROSE PARK, ILLINOIS
NEW BRUNSWICK, NEW JERSEY
INDIANAPOLIS 1, INDIANA

PROMPT DELIVERIES NOW!

Despite the tremendous demand for "Duet" we are finally caught up due to further production expansion. Thanks for your past forbearance.



Absorbs and Washes
LIKE A SPONGE

Used WET, DAMP or DRY

NO OTHER CLOTH LIKE IT!

Cleans, Dries and Polishes
LIKE A CHAMOIS

Owing to **AMAZING** AMOUNT of WATER it HOLDS, "DUET" can be used as a Sponge . . . or wrung out tightly, like a Chamois.

Ideal for **HEAVY DUTY** work in industry. **CANNOT UNRAVEL.** Each thread locked by a hidden stitch. **EXTRA DENSE**, long-wearing surface. **SAVES MONEY.** Used dry its dense surface picks up dust like a magnet.

ANOTHER PRODUCT OF
AMERICAN SPONGE & CHAMOIS CO., Inc.
 49 ANN STREET, NEW YORK 7
 248 MISSION STREET, SAN FRANCISCO 5
Producers of
AMSCO CHAMOIS and MERMAID SPONGES
 EST. 1869 **DEMAND BY BRAND**

(Continued from page 312)

production efforts, which resulted in conserving critical labor and material. With unusual conscientiousness of his responsibility and devotion to duty he contributed unstintingly of himself to the prosecution of the war. His accomplishments, which reflected great credit to the War Department and himself, were unusually numerous and valuable."

Roy D. Long has been named Director of Purchases and Stores of the Burlington Lines, which includes the Colorado and Southern and the Fort Worth and Denver City railroads. He formerly was purchasing agent, and will continue his headquarters in Chicago. Mr. Long has been with the Burlington nearly 54 years, joining the company in November 1892 as a messenger at its Aurora, Ill. store. He was made chief clerk to the general storekeeper, Chicago in 1910, assistant general storekeeper in 1914, general storekeeper in 1931. He was made Purchasing Agent of the Burlington in 1936, and later general purchasing agent to the railroad's subsidiaries—the Colorado & Southern, Fort Worth and Denver City and Wichita Valley.

Joseph P. Blum, has been appointed Purchasing Agent for the Chicago, Burlington & Quincy Railroad. He previously was assistant Purchasing Agent. Mr. Blum, whose headquarters are in Chicago, entered the Burlington's purchasing department in 1910, and was appointed assistant purchasing agent in 1931.

Benjamin A. Reynolds has been named Purchasing Agent for the Contractor Supply Department, James C. Goff Co., building materials, Providence, R. I.

Edward V. Taylor has been named Purchasing Agent of the City Investing Company, New York, N. Y., and will have charge of all purchasing for the company's realty holdings.

N. F. Walters has been appointed Purchasing Agent for the merchandising units of the Eastern Coal Corporation, Tierney Mining Co. and Premier Poca-hontas Collieries, which operate under the name of Red Robin Stores, Stone, Kentucky.

Ernest B. Smith has been appointed City Purchasing Agent, Nashville, Tenn., succeeding the late Verner M. Tolmie. Mr. Smith was promoted from a clerkship in the city comptroller's office to city budget director in 1940, serving in that capacity until he was classified as an accountant in 1943, the position he held previous to the current appointment.

Alfred D. Nutter, Jr., has been named Purchasing Agent for the Pittsburgh Plate Glass Company's glass division, according to announcement by M. E. Carlisle, General Purchasing Agent, Pittsburgh. Mr. Nutter has been as-

sociated with the company for 12 years. During the past five years he has been assistant to the glass division purchasing agent. He succeeds H. M. Hoffman who is retiring after more than 35 years of service with the purchasing department.

J. D. Neuman has been appointed assistant to the President and Director of Purchases, Henry A. Roemer, Sharon Steel Corporation, Sharon, Pa., and

Glenn R. McQuiston has been named Purchasing Agent. Mr. Neuman started to work at Superior Sheet Steel Co., Can-



J. D. Neuman

ton, Ohio in the sales department in June 1927. In January 1930, he transferred to Continental Steel Corporation as assistant manager of sheet sales, and joined Sharon Steel as specialty salesman in February 1931. In 1935 he was appointed manager of sales of Niles Rolling Mill Co., subsidiary of Sharon Steel, and in 1936 he was appointed general manager of sales where he has since been located. He graduated from Heidelberg College, Tiffin, Ohio, class of 1925 with an A.B. degree, and graduated from Harvard University, Graduate School of Business



Glenn R. McQuiston

Administration with M.A. degree in 1937. Mr. McQuiston started to work at Sharon Steel Corporation as office boy in September 1935; entered the purchasing department as a clerk in December 1935 and became Assistant Purchasing Agent in July of 1941.

Warren J. Matthews has returned to the Falstaff Brewing Corp., as Assistant Purchasing Agent, the position he held before joining the U. S. Army and spending 29 months in the service. Mr. Matthews saw action on the continent, landing on D-17 at Omaha Beach with the 5th Engineer Brigade.

(Continued on page 316)

For sealing oil, gasoline, grease, or water

. . . a tougher, more resilient sheet packing

THIS GENERAL-PURPOSE gasketing material—Armstrong's No. 841 Fibrated Leather—meets both ordinary and heavy-duty requirements for sealing bolted flanges. This sheet is made with live, springy leather, fibrated by a patented process and saturated with a special protein binder. That's why it's tougher, more resilient, more impervious to liquids, and more stable than vegetable fiber gasket materials. It is compressible, has a high percentage of recovery, and takes a minimum amount of set.

As a result, engineers find No. 841 Fibrated Leather excellent for sealing oil, gasoline, grease, or water at temperatures up to 300° F. It is used extensively for sealing transmission covers, transfer covers, handhole covers, and for similar bolted flange applications.

Where the superior resilience of No. 841 is not required, Armstrong's No. 1242 Fiber Sheet Packing provides a sure seal at low cost. And Armstrong has also developed a special sheet packing, No. 143, that does not corrode aluminum or magnesium—even in the presence of moisture and salt water. It is dense and tough, ideal for thin, light-weight gaskets.

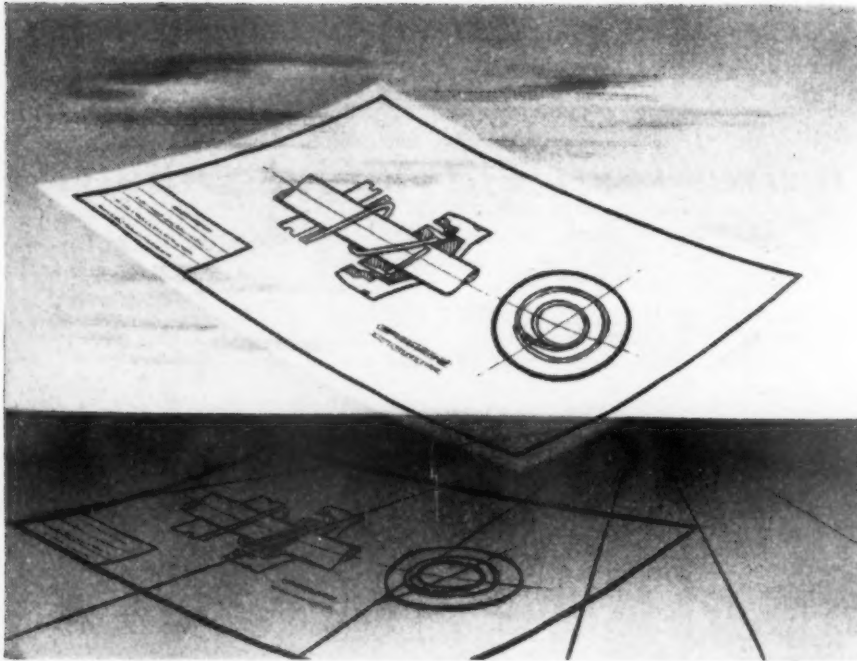
You can get Armstrong's fiber sheet packing materials in die-cut pieces, roll goods, and sheets—in standard thicknesses. Free booklet, "Gaskets, Packings, and Seals," gives specification data. Write today for your free copy. Address Armstrong Cork Company, Gaskets and Packings Dept., 7205 Arch St., Lancaster, Pa.

For same-day service on special die-cut fiber sheet packings, consult your near-by gasket cutter. Many leading cutters stock Armstrong's specialized sealing materials.



ARMSTRONG'S
GASKETS • PACKINGS
AND SEALS

ARMSTRONG'S INDUSTRIAL PRODUCTS: GASKETS, PACKINGS, SEALS, and MECHANICAL SPECIALTIES of Cork, Synthetic Rubber Compounds, Cork-and-Synthetic-Rubber Compositions, Cork-and-Natural-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers • RESILIENT SURFACINGS for desks, bars, counters, etc. • FLOORINGS for buses, railway cars, etc. • TEXTILE MILL SUPPLIES • SHOE MATERIALS • ADHESIVES • GLASS INSULATORS for communications, power lines.



As if suspended in air

Lines drawn on Arkwright Tracing Cloth stand out with such exquisite clarity that they almost seem suspended in air. This is due to the unusual transparency of the material that makes lines clear and sharp—without distortions due to pinholes, specks, dirt or stains.

Arkwright Tracing Cloths are preferred by experts because their transparency is obtained by special mechanical

processing rather than by surface oils which may become opaque with age; because they sustain one erasure after another without wearing through; and because they take inking over erasures without feathering.

Prove to your own satisfaction that this combination of exclusive features makes for better prints. Write for free samples. Arkwright Finishing Company, Providence, R. I.

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*Sold by leading
drawing material
dealers everywhere*
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Arkwright
TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

(Continued from page 314)

George L. Mitchell has been named to succeed F. H. Fechtig as Purchasing Agent of the Atlantic Coast Line railroad, Wilmington, N. C. He previously was Assistant Purchasing Agent. Mr. Fechtig has retired after spending 64 years in railroad service. He has been Purchasing Agent for the A. C. L. since July 1, 1894, celebrating his golden anniversary as Purchasing Agent in 1944.

J. U. King has been named Assistant Purchasing Agent for the Atlantic Coast line, having been promoted from general storekeeper. His continuous ACL service dates from 1903 when he became a member of the purchasing department staff. L. C. Walsh, who has been assistant chief clerk in the purchasing department since 1926, has also been named Assistant Purchasing Agent. He has been with the company since 1917.

K. M. Reed, Chief Purchasing Agent of the home office and general agencies in the field, Mutual Benefit Life Insurance Co., Newark, N. J., has been elected to the board of directors. He has been with



the company for the past 20 years. Mr. Reed is a member of the Veterans' Club of the Mutual Benefit and has served as secretary and treasurer of the club. He is a past treasurer of the Metropolitan Purchasers Assistants Club, New York, and is now a member of the Purchasing Agents Association of New York.

John H. Leatherbee has resumed his position as Assistant Purchasing Agent for the Crocker, Burbank & Company Assn., paper manufacturers, Fitchburg, Mass. He was recently released from the armed services.

T. Joseph McGrath has been appointed Purchasing Agent of the Diamond Instrument Company, manufacturers of precision instruments, Wakefield, Mass. He succeeds R. P. Grant who has been advanced to the position of assistant to the president.

Henry W. Gray has been named Purchasing Agent of the Cole-Hersee Co., makers of electrical automotive and aviation equipment, Boston, Mass. He succeeds Murray Shulman, deceased.

Captain E. E. Jordan has rejoined the Forbes Lithograph Mfg. Co., Boston, Mass., as Purchasing Agent. He left the

(Continued on page 320)

What makes a Super Quality? BAR OF STEEL!

ACCURATE COLD DRAWING

LABORATORY CONTROL

MAGNETIC ANALYSIS

PHYSICAL TESTING

CENTERLESS GRINDING

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B&L

PRECISION TO THOUSANDTHS

SINCE 1891, we have been producing Cold Finished Bar Steel and Shafting to meet the highest requirements of American industry.

Modern production methods, guided by laboratory control and the latest type of testing equipment, help to maintain B&L product-standards.

The quality of B&L Cold Finished Steel reflects the ability of the men who make it.

BLISS & LAUGHLIN, INC.

HARVEY, ILL.

• BUFFALO, N. Y.

• MANSFIELD, MASS.

*Sales Offices in all Principal Cities***COLD FINISHED STEEL AND SHAFTING**

**PARTICULAR
WORKERS OK**

AO Safety Clothing



Free from worry about burns and accidents, wearers of AO Safety Clothing can tackle the toughest welding jobs—turn out more and better work at lower costs.

Every item in the *complete* AO line—coats, pants, gloves, leggings, spats, etc.—is made from carefully selected materials—strong and durable—is designed to give maximum protection with all possible comfort. Call or write your nearest AO Branch Office for complete details.

American  Optical

COMPANY

Safety Division

SOUTHBIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

The Expensive Valve in any plant is the LEAKY Valve...

SEND FOR CHART

showing in dollars and cents what leaky valves waste in steam, water, and air. Ask your Lunkenheimer Distributor for free copy, suitable for displaying in your plant.

Minimize Waste

... Cut Costs ... with

LUNKENHEIMER VALVES



Don't neglect valve leaks! Even small losses of steam, water, or air can become very costly over a period of time—so costly that every plant management should carefully check all valves at regular intervals.

When quality-built Lunkenheimer Valves are installed, the chance of leakage is reduced to minimum. And even if, after extended service, Lunkenheimer parts should become worn, new parts can be quickly obtained from your Lunkenheimer Distributor... *precision-made parts that require no special fitting on the job.*

The Lunkenheimer ideal, today as for more than three quarters of a century past, is to produce valves that last longer, require fewer complete-valve replacements, cost less per year of service...

THE LUNKENHEIMER CO., Cincinnati 14, Ohio,
U.S.A. New York 13, Chicago 6, Boston 10,
Philadelphia 7. Export Department: 319-322
Hudson St., New York 13, N. Y.

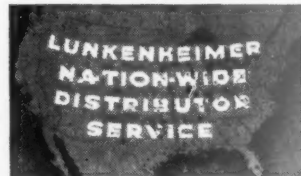
SEE OUR EXHIBIT, Booth 127, INFORMASHOW

Hotel Stevens, Chicago, May 27-29

YOUR LUNKENHEIMER DISTRIBUTOR

Has A Complete Stock of Parts

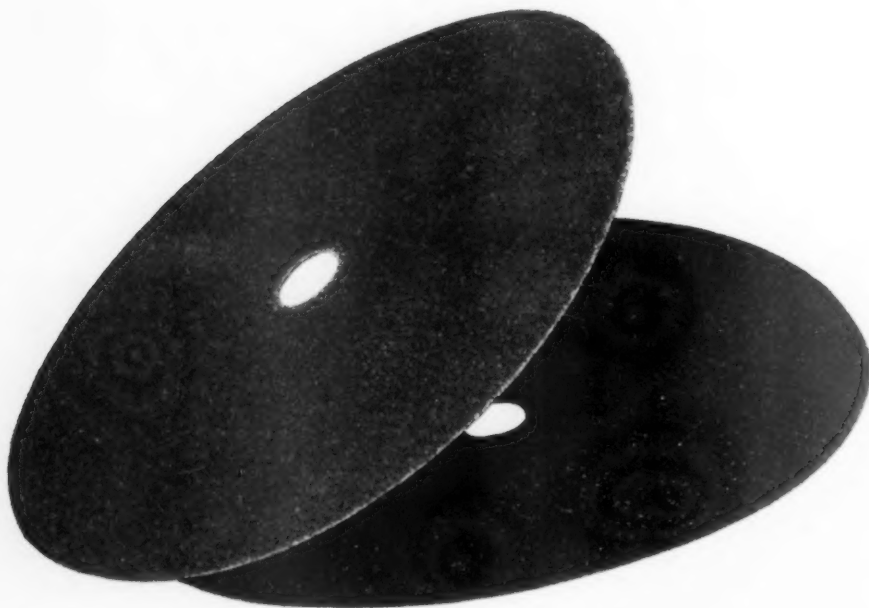
You can always rely on your nearest Lunkenheimer Distributor for better valve service. He carries a complete stock of precision-made Lunkenheimer parts, and is equipped to give you real help in solving problems of valve maintenance or operations. Call on him!



LUNKENHEIMER VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S. P.;
BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

SPEED-WET *and* RESINIZED



2 NEW METALITE DISCS

Announcing—for immediate release—two new RESIN-TYPE Metalite Fibre Discs—developed under war-time research for accelerated peace-time production.

SPEED-WET METALITE—green backing—extra heavy duty with extreme flexibility.

RESINIZED METALITE—brown backing—heavy duty, all purpose.

Combining the heat and humidity resistance of the Behr-Manning Durabonded process with the extra toughness and stamina of the resin treatment, Speed-wet and Resinized Metalite Fibre Discs are truly masterpieces of research in postwar disc manufacture. Production improvement, demonstrated in extensive field tests against first grade discs, averages 50 to 100%.

For increased production yield, you are urged to test these new discs on all portable disc grinding jobs at once. Instruct your distributor to include a test quantity of Speed-wet and Resinized Metalite Fibre Discs with your next order.



BEHR-MANNING, TROY, N.Y.

(DIVISION OF NORTON COMPANY)

QUALITY COATED ABRASIVES SINCE 1872

(Continued from page 316)

Forbes Company in March 1942 to join the armed forces and has served with the Army Map Service. On March 26th was recipient of an official citation for the Army Commendation Ribbon, by direction of the Secretary of War, "For exceptionally meritorious service as contracting officer, Army Map Service, Office of the Chief of Engineers, Washington, D. C., from July 1, 1945 to December 31, 1945."

William P. Durland has resigned as Purchase Engineer for the Holyoke (Mass.) Works of Worthington Pump & Machinery Corp., to accept a position with the Purchasing Department of the Celanese Corporation of America, New York City.

J. B. Connally, Manager of Purchases and Traffic of The Mesta Machine Co., Pittsburgh, Pa., retired from active service in March. He has been employed continuously by the Mesta Machine Com-



pany for the past 43 years. He started his career as a telegraph operator and agent for the Southern Railway. He then went into the stores department of the Baltimore and Ohio railroad, subsequently joining Mesta in the accounting department, and ten years later was made General Purchasing agent. He has been a director of the Purchasing Agents Association of Pittsburgh for many years and active in various civic affairs. Mr. Connally is succeeded by Russell Clarkson who has been associated with the company in various capacities for the last 21 years.

Russell A. Orr has been appointed Purchasing Agent of the Embalmers Supply Company, Westport, Conn.

C. A. O'Connor is now Purchasing Agent for the Chicago Steel & Wire Company, Chicago, Ill.

C. N. Swanson has been appointed Director of Purchases for the Continental Supply Company, Dallas, Tex., succeeding R. L. Middleton, resigned. Mr. Swanson previously was Kansas-Oklahoma district manager with headquarters in Tulsa.

P. L. Montemurro has been appointed Assistant Purchasing Agent for the 20th Century-Fox Film Corporation, Beverly Hills, Calif., succeeding the late R. C. Barrows.

(Continued on page 324)

Billings FORGINGS



WRENCH MAKERS
SINCE 1869

AIR CONDITIONING

CURLING IRONS

MACHINE TOOLS

PRODUCTION-wise

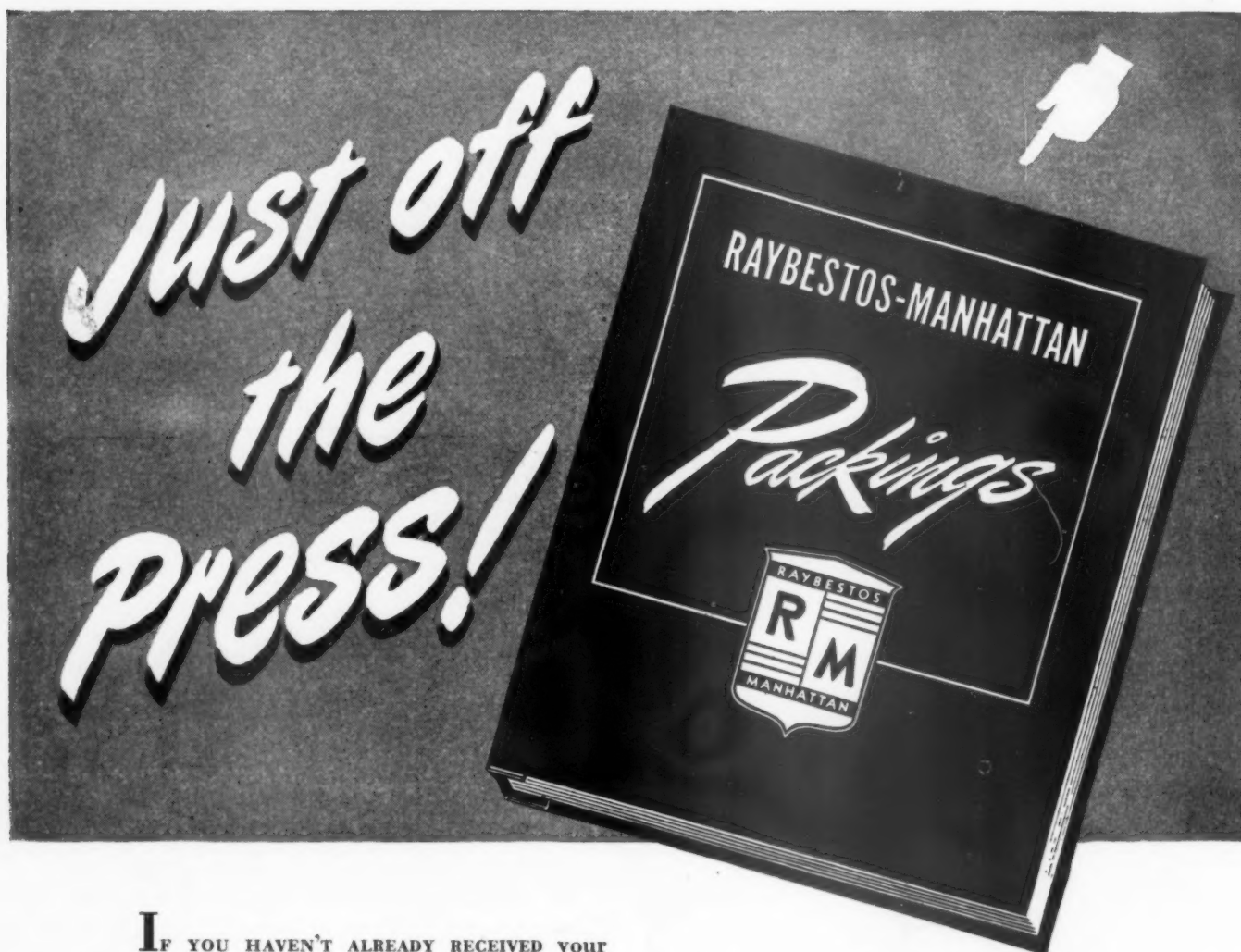
Forgings for all kinds of industrial needs - parts for refrigerating equipment, machine tools -- even curling irons at the moment. Billings are forging specialists - "production wise" - when it comes to producing good forgings - fast and in quantity.

*If it's a Forging-
See Billings*

WRITE OUR FORGING DIV.
Creative or Production ..
Billings Forging designers
and production
engineers are available
for consultation.

No. 4

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MAIN OFFICE AND PLANT
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This new edition is 72 pages . . . one of the biggest catalogs we have ever issued. It is fully illustrated, carefully indexed. It contains pictures and detailed descriptions of all of R/M's asbestos, rubber, fabric, metallic, and plastic packings and gaskets. Also engineering data and complete information on new products developed during the war years.

Keep this catalog in your desk for handy reference, and it will help you keep pumps, valves, hydraulic cylinders and other equipment operating continuously

. . . without unexpected, expensive shutdowns . . . and without wasteful, dangerous leaks and drips.

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They don't come much more special

★ You won't find a welding fitting like this listed in anybody's catalog. In addition to having integrally formed side walls, probably never before provided in a welding elbow, these are "special" all the way — special steel, special size and special wall thickness.

★ Every one of the hundreds of problems like this that we have tackled and solved across the years has added its important bit to our knowledge of controlling hot metal under pressure and impact. And this accumulated "know-how" has found its best expression in our standard line of WeldELLS and other Taylor Forge Welding Fittings.

That is why you find features in WeldELLS that are not combined in

any other welding fittings . . . tangents . . . extra metal distributed where strains are greatest . . . extremely accurate dimensions . . . just to mention a few that call for special processes and complete knowledge of forging technique.

Check the list of features opposite and you will agree that in everything conducive to sound engineering and utmost economy in pipe welding—

WeldELLS alone combine these features:

- **Seamless** — greater strength and uniformity.
- **Tangents** — keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends** —simplify layout and help insure accuracy.
- **Selective reinforcement**—provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum** — assures full strength and long life.
- **Machine tool beveled ends** — provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.

WeldELLS

have
everything



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Complete Manufacturing . . . Research . . . Sales

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SPECIALIZED PRODUCTION FINISHES

. . . Doing Tomorrow's Job Today!



The wire of a thousand uses . . . specially processed rod . . . cold drawn to exact size . . . furnished with smooth bright polished surface. So diversified are the uses of Johnson's XLO Music Wire that it is furnished in a wide range of sizes—to meet every commercial need—.003" to .200".

JOHNSON STEEL & WIRE CO., INC.
 WORCESTER 1, MASSACHUSETTS.

NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO

(Continued from page 320)

Francis A. Spinart is now Acting Purchasing Agent for the Narragansett Machine Co., Providence, Rhode Island. H. J. Moffitt, former Purchasing Agent, left the service of the company as of March 31st.

J. G. Whiting succeeds R. J. Alcorn as Director of Purchases for the Universal Cooler Division of International Detrola Corporation, Marion, Ohio.

Arthur F. Herman has been appointed Purchasing Agent for the Sun Chemical Corporation, New York, N. Y. He formerly was assistant general manager of the Rutherford Machinery Company division of Sun Chemical.

John McKee, who has been Purchasing Agent for the Norge division of the Borg-Warner Corp., Effingham, Ill., has been transferred to the Muskegon Heights plant. He has been succeeded at Effingham by Ralph Hornback.

J. Paul Nolan has been elected secretary of Pratt & Lambert, Inc., Buffalo,



N. Y. He joined the company in 1920, and currently is Purchasing Agent, a position he still holds.

Robert J. Alcorn has been appointed Vice President in charge of Production and Purchasing, The Heat-X-Changer Co., Brewster, N. Y., manufacturers of water cooling, refrigeration and air conditioning heat exchangers.

Henry N. Vreeland, former General Purchasing Agent of the Wright Aeronautical Corp., has been named Assistant Director of Purchases of the White Motor Co., Cleveland, Ohio. Mr. Vreeland had been with Wright for the past five years and previously had been with the Mack Truck organization for 20 years. He attended Rider College and Rutgers University.


John M. Brown, Director of Purchases, Veeder, Root, Inc., Hartford, Conn., was speaker at recent luncheon meeting of the Life Underwriters Association of Hartford, his subject being "The Salesman Today as the Purchasing Agent Meets Him."

Clyde Whitaker of Amarillo, Tex., has been named Potter County Purchasing Agent, succeeding Curtis Wescoat who resigned to enter business. He recently returned from more than three years with the Seabees in the Pacific.

(Continued on page 328)

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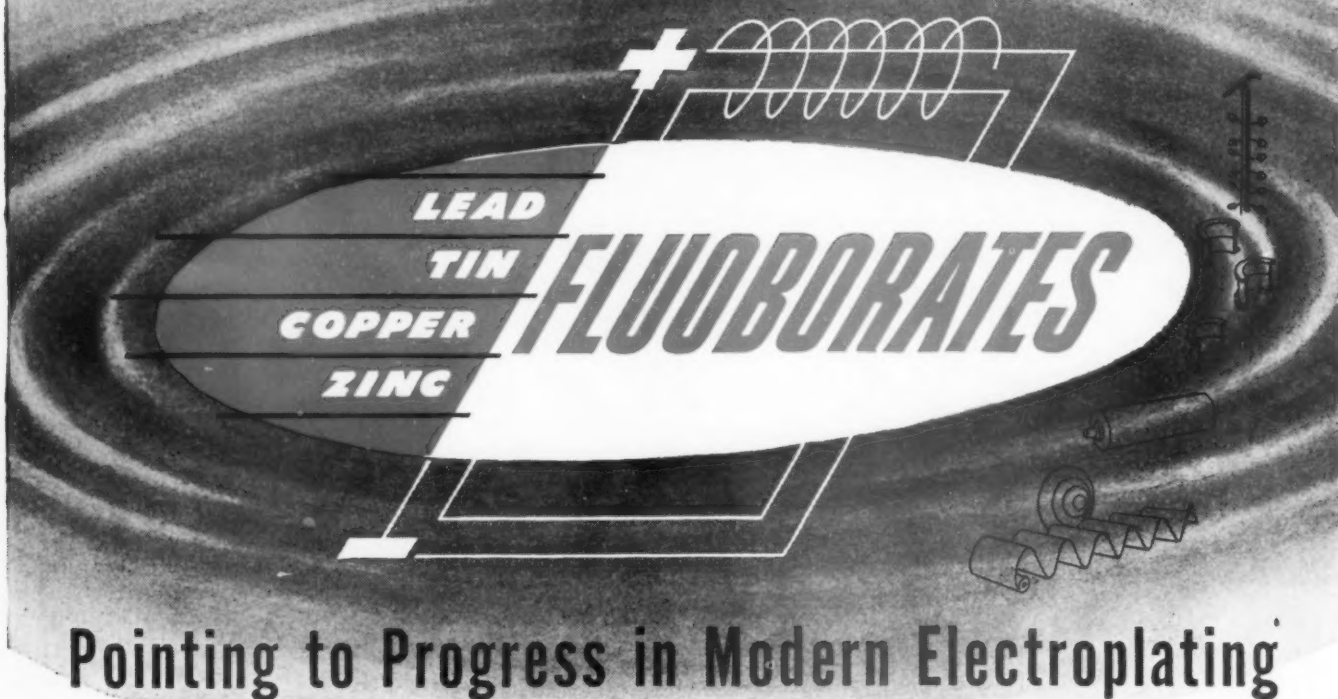
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Summed up, ARMCO “Quality Control” means just this:

Every mill-order is considered a special-purpose job—because *only one kind of steel* can be the right steel for the customer’s product.

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For example, if the customer’s product calls for a difficult drawing operation, a special carbon analysis may be required. Or special annealing and temper rolling—sometimes even changes in the sequence of operations may be necessary.

How do Armco’s metallurgists know the answers to strict “Quality Control?”

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It’s not guesswork—or theory. The answers come from experience with similar products; blueprint data ob-

tained from the customer; records and results on all previous orders; chemists’ analyses of all previous orders, and mill representatives’ data. These and other facts determine the steps in processing.

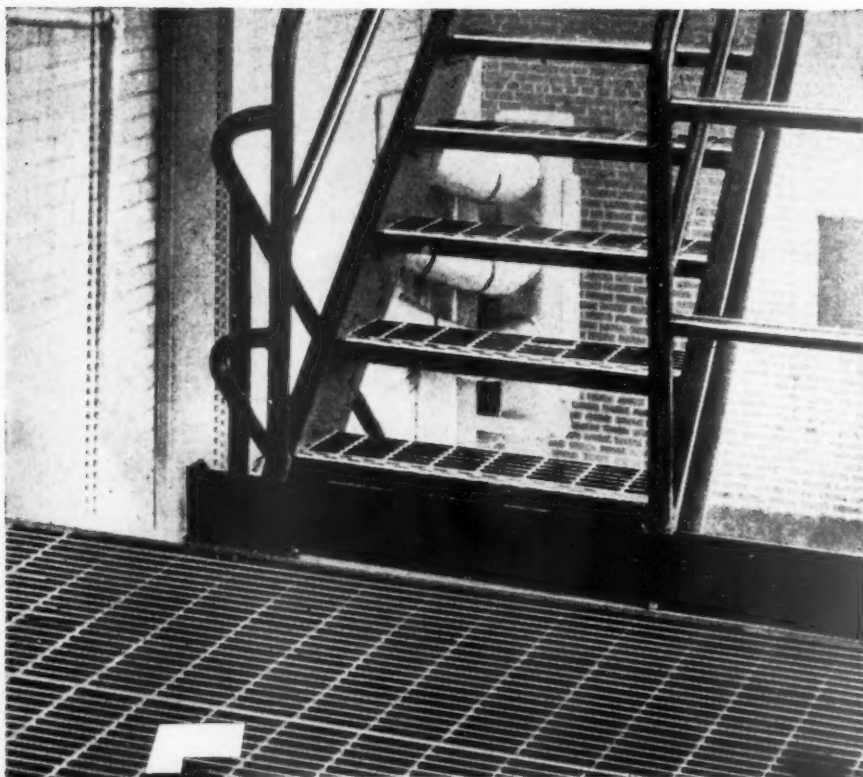
The ARMCO metallurgist may know you make furnaces, or washing machines—or even auto bodies. But that isn’t enough for him. He wants to know exactly what you do with the steel—and *how* you do it.

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SELF-CLEANING, no sharp corners to clog. **EASY TO MAINTAIN** . . . paint reaches entire surface.

MAXIMUM OPEN AREA for light and air. **SAFE** footing at all times with twisted cross bar.

STRONG electroforged construction for easy erection.

SAFE, because the twisted bar reduces slipping . . . and **STRONG**, because it's electroforged into one solid piece. Whatever your grating needs, you can depend on Blaw-Knox.

When further improvement for open-steel floors is called for by changes in business practice—Blaw-Knox will lead as always.

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Division of Blaw-Knox Company
2075 Farmers Bank Building
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(Continued from page 324)

E. S. Goodwin has been named Purchasing Agent for the Westinghouse Electric Corporation's new Buffalo plant, according to announcement by Andrew H. Phelps, vice president in charge of purchases and traffic. The Motor Division is moving to Buffalo from East Pittsburgh, Pa. Mr. Goodwin has been with Westinghouse since January 1935, and has worked in purchasing departments in Philadelphia and East Pittsburgh. He started as an expeditor at the South Philadelphia plant, later becoming assistant buyer, then a buyer. In March 1944 he was made a section supervisor in the purchasing department, East Pittsburgh, the position he held prior to his transfer to Buffalo. He graduated from Miami University, Oxford, Ohio, in 1934 with a bachelor of science degree in business administration.

Harold A. Neff has been elected a vice president of the Holo-Krome Screw Corporation, Hartford, Conn. Mr. Neff started with the company a few months after its organization in 1929 in the accounting department. In 1932 when



the company moved its plant to Bristol, he was placed in charge of the factory cost system. When Holo-Krome moved to its present location in Elmwood, Conn., in 1936, Mr. Neff assumed the duties of Director of Purchases and supervised personnel work. In July 1943 he was elected to the office of assistant secretary, the office he held previous to the present appointment. He is affiliated with the Purchasing Agents Association of Connecticut, the Hartford Engineers Club, and the Employment Managers Association.

Col. Thomas W. Jones, head of The Army Quartermaster Purchasing Office in New York City, announces that his office has assumed the procurement functions of the Jersey City Quartermaster Depot.

Bruce R. McIntyre, Jr., formerly Assistant Purchasing Agent of the Copperweld Steel Company, Pittsburgh, has joined the Southwest Steel Corp., and will make his headquarters at Wolf Terminal, Memphis, Tenn., where he will be in charge of the corporation's operations in the South and Southwest.

J. H. Kitterman has been named head of the Purchasing and Production Scheduling Department of the Bostrom Manu-

(Continued on page 332)

Portable Drilling-- Drill Press Work



*This One Tool Has
Power for BOTH!*

The Van Dorn $\frac{1}{2}$ " Standard Portable Electric Drill is one of the most versatile and useful tools in plants and shops of every kind.

As a portable tool, it drives twist drills up to $\frac{1}{2}$ ", wood augers up to 1", and Hole Saws for cutting clean, round holes up to $3\frac{1}{2}$ " diameter in any material a hacksaw will cut. And its compact construction, minimum spindle offset and horizontal spade handle come in handy on work in close quarters.

What's more, mounted in a Van Dorn Drill Stand, the same $\frac{1}{2}$ " Standard Drill makes an accurate drill press—with 6-1 leverage to put on the pressure, or for a slow, smooth feed on delicate work. Stands are made for bench, post or pedestal mounting.

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* This is Frank Ivey, machine shop veteran and a member of the OSTUCO 50-Year Club. Frank is one of many skilled employees who have devoted a lifetime maintaining the OSTUCO tradition of quality, a tradition founded in the earliest days of tube making in America.

The Problem: Continued improvement in the design and construction of aircraft emphasized the need for a structural material light in weight, yet possessing inherent strength.

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Compressed air has over 600 industrial uses. And that air isn't free. It costs as much as the expense of the machinery that compresses it. In the last decade, industry has demanded more and more compressed air

until now air as an industrial material is consumed by the millions of tons. It takes more than a ton of air to melt a ton of iron; more than 400 pounds of air to spray a pound of paint.

Dresser Industries is constantly at work engineering down the cost of moving air. And what goes for air goes for any other gas. Whatever the job calls for—millions of cubic feet of natural gas at 2,000 pounds per square inch for putting the final squeeze on an exhausted oilwell, or a precisely measured stream of air for supercharging—Dresser has engineered the right type of equipment.

It may be a Clark compressor built on the "Angle" principle to deliver more horsepower per unit of space than any other gas engine-driven compressor; it may be a Roots-Connersville Rotary Positive Blower engineered with such ingenious simplicity that there is virtually no maintenance needed; or an R-C Centrifugal, if that's what's needed. And, in every case, there is Dresser Manufacturing Division's unique flexible pipe coupling that prevents leakage caused by vibration in air lines.

If air or any other gases are to be moved, or compressed, Dresser Industries, Inc., can do it at lower cost with equipment that is *First to be new—Last to wear out.*

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DRESSER Manufacturing Div., Bradford, Pa.

DRESSER Manufacturing Company, Limited,
Toronto, Ont., Canada

INTERNATIONAL Derrick & Equipment Co.,
Columbus, Marietta & Delaware, Ohio;
Beaumont, Texas; Torrance, Calif.

KOBE, Inc., Huntington Park, Calif.

PACIFIC Pumps, Inc., Huntington Park, Calif.

PAYNE Furnace Co., Beverly Hills, Calif.

ROOTS-CONNERSVILLE Blower Corporation,
Connersville, Ind.

SECURITY Engineering Co., Inc., Whittier, Calif.

STACEY BROS. Gas Construction Company,
Cincinnati, Ohio

VAN DER HORST Corp. of America,
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As Wrench—parallel-action jaws close like a vise, hold FAST. **As Cutter**, blades on outside of head, convenient to use. **As Pliers**, open throat is ideal for use with wire. Compound action gives over twice the cutting and gripping power of conventional design.



Combination Slip-joint

Side Cutting Pliers. Full forged from alloy steel. Long, narrow, serrated concave grip. Heavy pin rivet accurately fitted. Black finish. An ideal, rugged tool for the mechanic.



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Electric furnace, nickel chrome alloy steel, drop forged. Machine tapered noses, uniformly hardened and tempered. Corrugated gripping surfaces. Temper black handles. A fine tool for the electrical worker.

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(Continued from page 328)

facturing Co., Milwaukee, Wis., manufacturers of tractor and truck seat cushions. He was in charge of the production department for a number of years.

Dan L. McNamara has been named Purchasing Agent for the University of Southern California, Los Angeles, Calif.

Beecher Atkinson is now Purchasing Agent for the Foster & Kleiser Company, Los Angeles, Calif.

Harold J. Adams has been named Purchasing Agent for Mills Iron Works, Inc., Los Angeles, Calif.

Donald R. Hunt has been appointed Purchasing Agent for the Andrew Brown Co., Los Angeles, Calif.

John E. Rosser, formerly Purchasing Agent for Heyl and Patterson, Inc., has joined the Purchasing Department of



The Levinson Steel Co., Pittsburgh, Pa. Mr. Rosser's headquarters are at the South Side plant office. Jack Levinson is Director of Purchasing.

Paul Leitzell has been named Purchasing Agent for the Carnation Company at Los Angeles, Calif.

Thomas F. Fitzgibbon has been named Purchasing Agent for the Garret Supply Company, Los Angeles, Calif., succeeding H. B. Scott, deceased.

H. E. Eastman is now Purchasing Agent for the Clary Multiplier Corp., Los Angeles, Calif.

George J. Sheldon is Purchasing Agent for Drayer-Hanson, Inc., Los Angeles, Calif.

Frank B. Rhodes, Jr. has been named Purchasing Agent for the Boston Wire Stitcher Company, East Greenwich, R. I. and affiliated companies.

Charles E. Hopkins is now Purchasing Agent for the Harris Lumber Co., Inc., building materials, Providence, R. I.

G. D. Graham has been appointed Purchasing Agent for the City of Apponaug, R. I.

William H. Gamble has been made Supervisor of Purchases, The Congdon & Carpenter Co.—steel, industrial supplies and metals—Providence, R. I.

Franklyn L. Macomber has been named Purchasing Agent for the Tower Iron Works, Providence, R. I.

Lewis Boex is now Purchasing Agent for the Stevens & Thompson Paper Co., Saratoga Springs, N. Y., succeeding Lester J. Stephens in that function, the latter having been appointed manager of the company's Greenwich plant. Mr. Stephens is also assistant secretary and treasurer of the company, a position he will continue to hold.

Henry Vogland, Jr., has been named Purchasing Agent for Wentworth & Irwin, Inc., Portland, Oregon.

Neil O. MacDonald has been made Purchasing Agent for the Charles S. Bush Company, industrial chemicals, Providence, R. I.

Roy Geier, formerly Assistant Purchasing Agent of the Chicago Milk Division of the Borden Company, has been appointed Purchasing Agent of that Division, succeeding John G. Martensen, deceased.

Charles C. Eckert, Plant Purchasing Agent, Plastics Division, Celanese Corporation of America, has been named production superintendent at the company's Belvidere, plant.

Albert G. Binder has been named Plant Purchasing Agent, manufacturing department at Newark, N. J., Plastics Division, Celanese Corporation of America. He has been with the company 26 years.

B. W. Hines has been appointed Purchasing Agent for the newly organized firm of Electrical Contractors, Inc., with offices in the Mutual Life Building, Seattle, Wash.

L. Halverson is back with the Pacific Marine Supply Co., Seattle, Wash., as Assistant Purchasing Agent, after serving the Seattle Port of Embarkation during the war.

H. G. Sand succeeds Ernest L. Anderson as Purchasing Agent for the Fentron Steel Works, Seattle, Wash., the latter having resigned to go into business for himself.

Charles Mann, Purchasing Agent for the Nestle-LeMur Company, is now located at Meriden, Conn., where his company recently moved.

William F. Hohman has been named Purchasing Agent for the Englishtown Cutlery Company, New York, N. Y. He formerly was Purchasing Agent for Electrol, Inc.

A. L. Muller, formerly District Purchasing Agent for the Aluminum Company of America at Monroe, Mich., succeeds L. B. Neubert as District Purchasing Agent at Lafayette, Indiana. Mr. Neubert has been transferred to the Central Purchasing

(Continued on page 334)



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Their many exclusive qualities provide the extra advantages that make products work better! You can, for example, have the advantage of a higher Rockwell hardness when you specify FORMETAL Bushings and Bearings. Their machinability is assured by the proper combination of our alloy materials. Custom-made oil grooves to provide a wiping action of the oil film are engineered to the need. This is vital to the life of a bushing or bearing.

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This up-to-the-minute news-picture magazine shows how wide-awake management in many lines of business is utilizing palletized unit loads and fork trucks . . . to end the burden of costly manual methods and speed production.

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Mechanized handling made available to highway shippers by the new Clark Trucloader Method.

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COMPANY _____

CITY _____ STATE _____

(Continued from page 332)

Department at Pittsburgh. Mr. Muller has no successor at Monroe for the reason that at Government request, the company has vacated all RFC-ODP Government-owned plants which the Aluminum Company of America built and operated for D.P.C. during the war.

F. W. Wodrich, Jr., succeeds Henry Coit as Purchasing Agent for Geophysical Service Inc., 1913 North Harwood St., Dallas, Texas. Mr. Coit is now vice president of the Wink Supply Company, Dallas. Mr. Wodrich was formerly connected with the Kendall Refining Company of Bradford, Pa.

George H. Henneke has succeeded Paul Garrick as Purchasing Agent in Seattle, Wash., for W. P. Fuller & Company. He will also be in charge of traffic matters.

Margaret Clement is now handling Purchasing for the Coastwise Line, Seattle, Wash. R. M. Costigan, former Purchasing Agent, has been named District freight agent.

Phil H. Cessno succeeds Ralph P. Mulvane as Purchasing Agent for the Pacific Electrical & Mechanical Co., Seattle, Wash.

AMONG THE COMPANIES YOU BUY FROM

Worthington Pump and Machinery Corp., El Paso office: P. A. Alers has been made manager. He has been connected with the company since 1933.

H. O. Canfield Co., Bridgeport, Conn. H. G. Staley, returned veteran and



former sales manager of a mid-western supply company, has been named sales manager of a newly opened West Coast sales office.

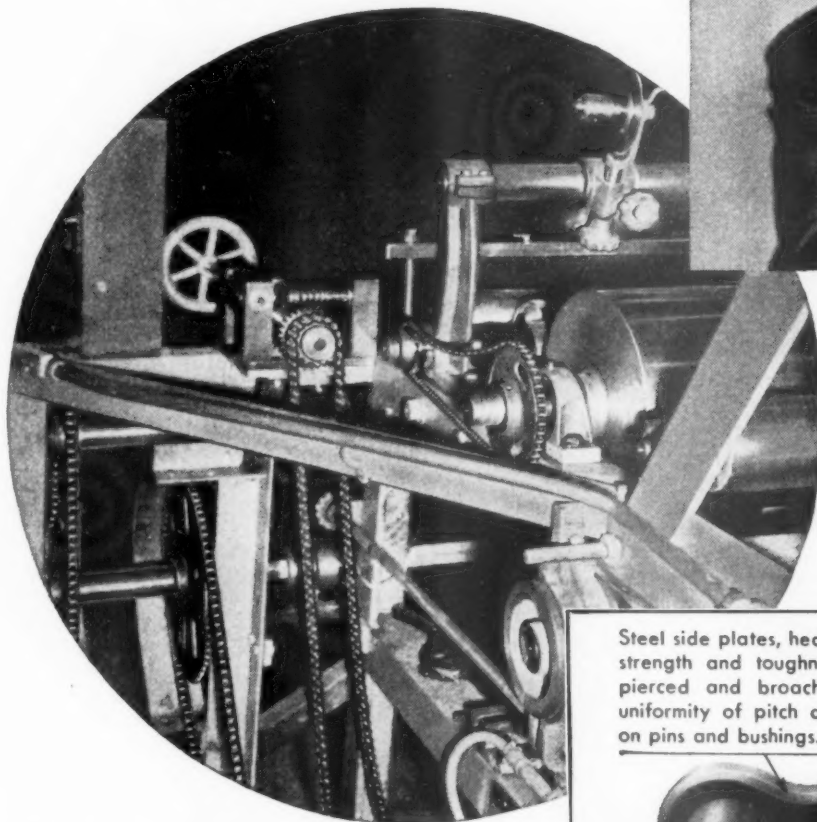
Wickwire Spencer Steel, New York, N. Y. Harry Bottomley, recently discharged from military service, has been appointed sales representative in the southern Pennsylvania and Virginia territory replacing H. C. Stultz, resigned. He was employed in the Hardware Products department before his entrance in the service.

(Continued on page 336)

DO YOU KNOW ROLLER CHAIN . . .

is the economical drive?

① **THE HIGH EFFICIENCY**, low maintenance, and compactness of roller chain make it the most economical drive in both initial and ultimate costs for the majority of power transmission jobs.

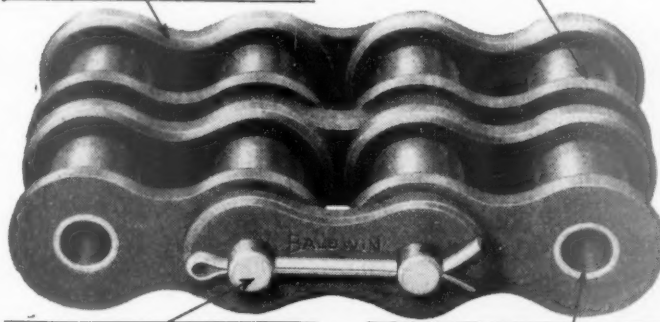


② **THE INHERENT VERSATILITY** of Baldwin-Rex roller chains can usually effect savings in the designs of the machines to which they are applied. For example, as this paper-winding machine demonstrates, no tension is required on the slack side of a drive. This, plus the exceptional compactness offered by roller chains, reduces overhung loads with resultant savings in shafts and bearings.

③ **ROLLER CHAINS** are equally efficient on both long and short centers. Center distances can be varied as desired. Speed ratios can be easily changed by simply changing sprocket size. No elaborate speed changing mechanisms are needed. Remember, the cost of roller chain drives, properly applied, is usually lower than any other type of equipment.

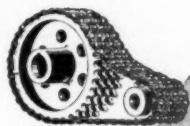
Steel side plates, heat-treated for strength and toughness, blanked, pierced and broached to insure uniformity of pitch and press fits on pins and bushings.

Alloy steel roller heat-treated for extreme toughness and resistance to wear, then ground to size.



Alloy steel pin, case hardened, ground for accuracy, superior bearing surface. Shorter pitch chains furnished with riveted construction.

Alloy, case hardened steel bushing ground for accuracy and press fits in side bars.



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Write for information and competent assistance on your specific drive problems or for catalogs on Baldwin-Rex roller chains.

BALDWIN-DUCKWORTH DIVISION OF CHAIN BELT COMPANY
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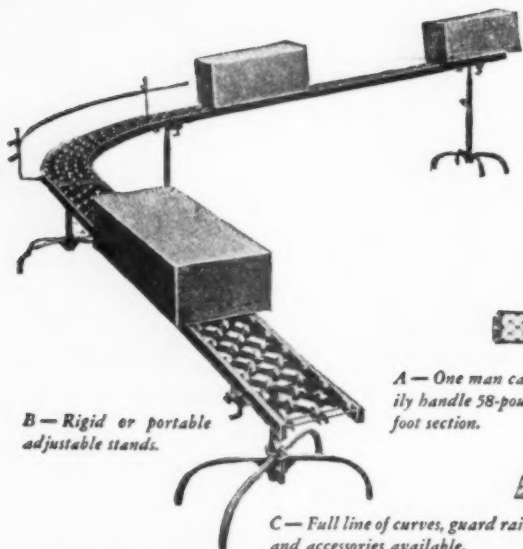
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Load-Veyors combine great strength and light weight. Exclusive Market Forge features . . . grid construction supports ball bearing rollers on both sides . . . hardened inner and outer ball bearing races minimize wear . . . Load-Veyors may be used on either side . . . rails on reverse side provide for safe conveyance of small packages.



B—Rigid or portable adjustable stands.

A—One man can easily handle 58-pound 10 foot section.

C—Full line of curves, guard rails and accessories available.

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can supply — standard or special fasteners in the form of bolts, nuts, screws or rivets

May we quote your next order?

BOLTS · NUTS · RIVETS SCREWS



CLARK BROS BOLT CO.



MILLDALE, CONN.

(Continued from page 334)

Monsanto Chemical Co., Birmingham, Ala. office: Sam R. Clement has been made assistant general branch manager of Birmingham sales district, which comprises the Southeastern states.

Republic Drill and Tool Co., Chicago, Ill. Voss Machinery Co., 2882 West Liberty Ave., Pittsburgh, Pa., will sell and service Republic drills in the Western Pennsylvania, West Virginia, Eastern Ohio and Western Maryland area.

H. O. Canfield Company, New York City area: Robert Reid has been appointed



representative for the New York City Metropolitan area.

Jessop Steel Co., Washington, Pa. Wayne R. Spahr, who has been associated with the company for the past eleven years, has been appointed advertising manager.

Pittsburgh Plate Glass Co., Columbia Chemical Division, Cincinnati office: J. Calvin Lee has returned to the Cincinnati area as a sales representative, after serving as a Captain with the Army's 117th Combat Engineers.

Sylvania Electric Products, Inc., Salem, Mass. Harris Reinhardt has been named manager of the Commercial Engineering



department of the Lighting division. Prior to joining this company, Mr. Reinhardt was affiliated with the Westinghouse Lamp Division.

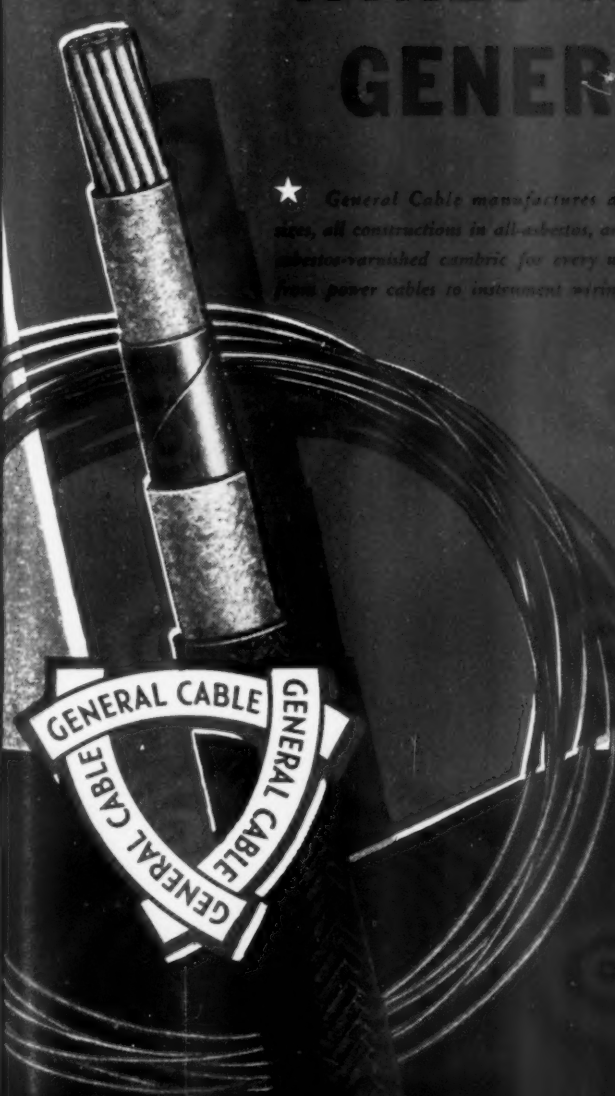
Ampco Metal, Inc., Milwaukee, Wis. J. P. Henry has been appointed Eastern Zone manager in charge of district engineering offices in Hartford, Conn., Newark, N. J., Philadelphia, Pa., and Washington, D. C., with headquarters in the Capitol National Bank Bldg., Hartford, Conn. A. M. Smith and J. W.

(Continued on page 338)



Asbestos Insulated

WIRES AND CABLES OF GENERAL CABLE QUALITY



★ General Cable manufactures all sizes, all constructions in all-asbestos, and asbestos-varnished cambric for every use from power cables to instrument wiring.

Products of the same reliability which protected lives aboard the thousands of navy and merchant ships during the war. The Company's war-stimulated production capacity, with improved manufacturing techniques and experienced craftsmanship, makes General Cable your logical source of supply for all-Asbestos and Asbestos-VC Wire and Cable needs . . . Phone, write or telegraph the nearest General Cable office. Catalogs available for your advance information.

GENERAL CABLE CORPORATION

Manufacturers of Bare and Insulated Wires and Cables for Every Electrical Purpose

Headquarters at 420 Lexington Avenue, New York 17, N.Y. General Cable Corporation Sales Offices are located at: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Kansas City, Los Angeles, New York, Philadelphia, Pittsburgh, Rome, N.Y., St. Louis, San Francisco, Seattle, Washington, D. C.

THEY TRAVEL Fast ...



When They're Clearly Marked

Your products will get there faster if your shipping containers are clearly stenciled. Legible stenciling facilitates shipping and insures delivery at the proper destination, thus eliminating expensive and bothersome lost shipments.

Matthews stencil inks for use with Matthews brass stencils are the answer to these problems. A complete line of inks and brushes is available for immediate shipment.

Consult Jas. H. Matthews & Co., for nearly a century the *COMPLETE* marking house, for the answer to all your marking needs.

JAS. H. MATTHEWS & CO.

3959 FORBES STREET

PITTSBURGH 13, PA.

BRANCH
NEW YORK, BOSTON, CHICAGO.PLANTS
PHILADELPHIA, NEWARK, SYRACUSE

District Sales Offices: Cleveland, Cincinnati, Birmingham



(Continued from page 336)

Nebel will handle the Newark district office. W. F. Taff, field engineer, has been transferred from the Cincinnati office to Indianapolis. Chicago office: F. C. Hawks has joined the sales staff as a field engineer, specializing in mill products.

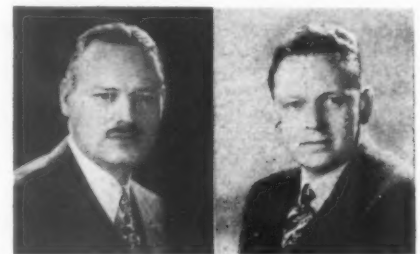
E. B. Packard Co., New York, N. Y. T. A. Hyde, who recently retired as vice president of Henry G. Thompson & Son, New Haven, has been elected vice-president in charge of sales.

Simonds Worden White Co., Dayton, Ohio. Nels G. Johnson, who has been with the Company since 1931, has been promoted to general sales manager. John



H. Allison has been named sales manager of the grinding wheel division. Howard D. Blackburn, who has been the company's advertising manager, will continue in that capacity, but is given the added duties as sales manager of the machine-knife division.

Jones & Laughlin Steel Corp., Pittsburgh, Pa. H. M. Knobloch has been appointed district sales manager of a newly opened district sales office in Indianapolis. R. G. Scoggins has been named district sales manager in Los Angeles to succeed



H. M. KNOBLOCH W. S. WAINWRIGHT

T. W. Bell, who has been made special sales representative in Los Angeles. W. S. Wainwright has been transferred to San Francisco as district sales manager. W. L. O'Connell has been appointed resident manager of sales in South Bend, Ind.

American Chain & Cable Co., Wright Mfg. Division, Cleveland, Ohio office: J. W. Ward has returned to the sales force, after almost five years service with the armed forces during which time he attained the rank of lieutenant-colonel.

Brown Instrument Co. Division, Minneapolis-Honeywell Regulator Co., Rochester, N. Y. G. L. Britton has been made

(Continued on page 342)

Pittsburgh ... one source for all these BAR, WIRE and TUBULAR PRODUCTS



As a completely integrated steel manufacturer, Pittsburgh Steel Company controls every step in the making of its products from raw materials to final inspections. Its plants, the by-product coke plant, steel and wire products plant, and the nearby tubular products plant are operated by one organization at, in effect, one manufacturing location.

It is this concentrated manufacturing and responsibility which account for the consistently uniform quality maintained not only from item to item but also from order to order and from year to year. The products of chief market interest are bars, wire, wire products and seamless steel tubes, in carbon, alloy and stainless steels, and in both semi-finished and finished product forms as indicated in the accompanying list. A single reliable source for a wide range of quality products.

PITTSBURGH STEEL COMPANY

1649 GRANT BUILDING

PITTSBURGH, PA.

* **Pittsburgh** — trade name for Pittsburgh Steel Company products

"A Great Name in Steel"

Hot Rolled and
Cold Drawn Bars
in coils and straight lengths
Wire Rods
Manufacturers Wires
in Carbon, Alloy and
Stainless Steels

Welded Wire Reinforcement
Industrial Fences
Farm, Poultry and Lawn Fences
Welded Fence Fabrics
Carbon and Stainless Nails
Safety Highway Guard
Steeltex Building Products

Seamless Tubes
in Carbon, Alloy and
Stainless Steels
Mechanical Tubes
Pressure Tubes
Cracking Still Tubes
Oil Well Tubing, Casing
and Drill Pipe
Tubular Railway Axles

Furnace, Nut and Breeze Coke
Coke Plant Chemical Products

The material in a valve must suit the service,
POWELL has all kinds!

100 YEARS in the School of Experience has taught us many valuable lessons. Not the least of these is the importance of using the *right* valve in the *right* place. Not only type and design but *material* as well must be "just what the doctor ordered."

It is poor economy to use iron when steel is definitely indicated. On the other hand, if iron is thoroughly adequate for the job, there's no sense in using a more expensive material.

The POWELL lines of Iron and Steel Valves are so complete that there's a valve of correct type, size, and design for every service in which these valves are applicable. Equally complete lines of Bronze Valves and Valves to resist all known corrosive media are included in the Complete POWELL Line. The latter are made in the widest range of pure metals and special alloys ever used in making valves. POWELL Engineers are always ready to help you select the right valves.



Fig. 1793

Fig. 1503

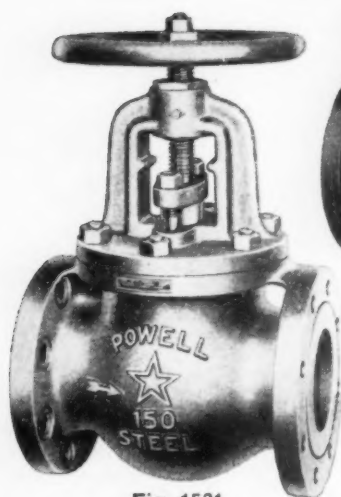


Fig. 1531



Fig. 559



Fig. 241

Catalogs on Request.
 Kindly specify whether
 you are interested in
 Bronze and Iron; Cast
 Steel; or Corrosion Re-
 sistant Valves.

Fig. 1531—Class 150-pound Cast Steel Globe Valve. Has flanged ends, outside screw rising stem and bolted flanged yoke. Powell Cast Steel Valves are available in pressure classes from 150 to 2500 pounds, inclusive.

Fig. 559—125-pound Iron Body Bronze Mounted Swing Check Valve. Has flanged ends, bolted flanged cap and regrindable, renewable bronze seat and disc. Disc, when wide open, permits full, unobstructed flow through the valve body. Also available in All Iron.

Fig. 241—125-pound Iron Body Bronze Mounted Globe Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke, and regrindable, renewable bronze seat and disc. Also available in All Iron.

Fig. 1503—Class 150-pound Cast Steel Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc.

Fig. 1793—125-pound Iron Body Bronze Mounted Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke, bronze seat rings and taper wedge solid disc. Also available in All Iron.

The Wm. Powell Company, Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES



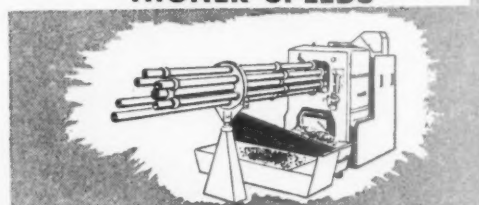
Save 1/2 Material Cost

on Screw Machine Stock!

BRASS
18" length
Wt. approx. 4 1/2 lbs.

R317-T
3 lengths, 18" each
Wt. approx. 4 1/2 lbs.

HIGHER SPEEDS



R317-T can be run at comparable or, in some cases, higher speeds than brass.

Get 3 times as many parts at half the cost of brass with R317-T, Reynolds new high-strength, free-machining alloy

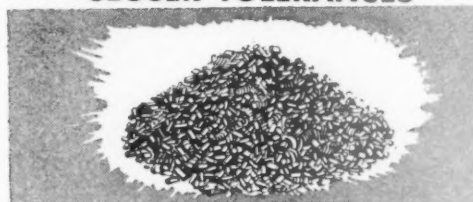
CONSIDERED BY MANY OPERATORS as better than brass. By the pound, R317-T gives you 3 times as many parts, costs much less.

With Reynolds R317-T, cold drawing strains are relieved by final heat treatment in our plant. As a result, you can machine it accurately at higher, more profitable speeds, with practically no tendency to warp.

Get it now! R317-T is ready for immediate shipment in rounds and hexagons. 17S-T, Reynolds standard screw machine stock, is also available.

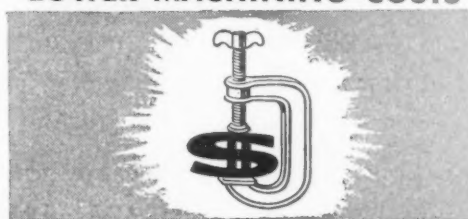
Consult Reynolds. Reynolds is ready to work with your engineers. Offices in principal cities. Phone nearest office . . . or write, wire or phone Reynolds Metals Company, Aluminum Division, 2525 South Third Street, Louisville 1, Kentucky.

CLOSER TOLERANCES



Excellent free-machining characteristics. R317-T does not run with the tool. Forms small chips—permits close work at high speeds.

LOWER MACHINING COSTS



High speeds, plus more accurate production, machined with less wear-and-tear on bearings. Result: lower cost per unit, reduced maintenance with Reynolds new R317-T.



REYNOLDS

The Great New
Source of

ALUMINUM

INGOT • SHEET • SHAPES • WIRE • ROD • BAR • TUBING • PARTS • FORGINGS • CASTINGS • FOIL • POWDER



1. **DRILLS . . .** Celfor Drills were the first to be made by the Celfor Process: forged to shape, then twisted hot—producing stronger, tougher, better drills.
2. **REAMERS . . .** for 42 years Celfor Reamers have lead the procession, a leadership won and held by a sturdy quality never compromised.
3. **CARBIDE CUTTERS . . .** new members of the Celfor family, the only complete line including all three—drills, reamers and carbide cutting tools.

You simplify your tool buying, you make certain of tool quality, you cut tool costs to the minimum—when you stick to Celfor.

Call your distributor and if he can't supply you—write direct to us.



DRILL DIVISION

CLARK EQUIPMENT COMPANY

BUCHANAN, MICHIGAN

*Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS*

(Continued from page 338)

manager of the newly opened sales and service office at 16 State Street, Rochester. Detroit Office: O. J. Richardson has been named Industrial Manager. Cincinnati: Geo. W. Brown has been appointed Industrial Manager.

Libbey Glass Co., Philadelphia office: J. C. McLaughlin has rejoined the company's sales office after 3½ years service with the Eighth Air Force. Previously he was a member of the sales-service force in the home office.

United States Rubber Co., New York, N. Y. Walter F. Spoerl has been appointed general sales manager of the



mechanical goods division. Mr. Spoerl, who started in the company's Chicago office 38 years ago, succeeds H. A. Everlien, who died after 43 years with the company.

Kennametal Inc., Toledo, Ohio office: E. D. Porter has been placed in charge of the newly opened office at 538 North Erie Street.—Pittsburgh, Pa.: Fred J. Bennis, Jr. has been named manager of the recently established district office at 600 Grant Street.

General Box Co., Chicago, Ill. George T. Walne has been made manager of the



Central district sales territory. He has been connected with the company for 19 years.

Pennsylvania Salt Mfg. Co., Washington, D. C. office: G. Webber Knight has been appointed manager, headquarters being at 1022 17th Street, N. W. Mr. Knight has been with the company 21 years.

Continental Can Co., New York, N. Y. T. C. Fogarty, formerly general manager of the Eastern division, has been elected vice-president in charge of sales. Paul E. Pearson has been named vice-

(Continued on page 346)

How ROEBLING makes wire...

to help cut rejection costs, shortcut production methods

FASTER, more simplified production—and product improvement, too—can be yours with the help of the *right*, quality-finished wire. Made by Roebling, it's supplied *exactly* as you specify it...uniform throughout in steel analysis and temper, gauge and finish. That means fewer rejects, less preparation time, smoother machine performance.

At Roebling, painstaking care goes into every phase of wire manufacture. Drawing, annealing, cleaning, patenting, galvanizing—these and many more call for the finest in equipment and workmanship. Guiding them all the way are modern research facilities and seasoned engineering skill.

In buying wire for the products that will bear your name, you can depend on Roebling's century-long experience in wire specialization. Why not take it up with a Roebling engineer? Our nearest branch office will gladly arrange it.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY

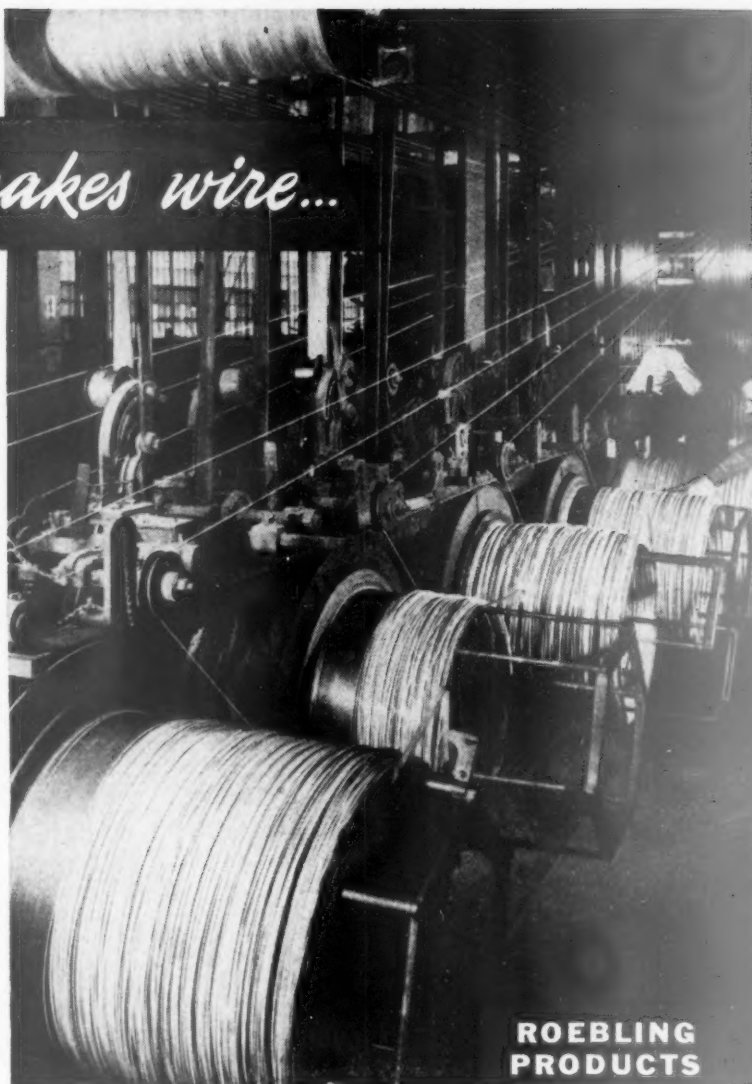
Branches and Warehouses in Principal Cities



"Keep Cutting Costs"—says
OLD MAN COMPETITION

Galvanizing is one of many steps in making wire. Shown here is the final stage in the process, with the finished wire being coiled. Photo was taken in the Roebling mills by Robert Yarnell Richie.

Wire Rope and Strand • Fittings • Slings
High and Low Carbon Acid and Basic
Open Hearth Steels • Cold Rolled Strip
Round and Shaped Wire • Aircord,
Swaged Terminals and Assemblies • Aerial
Wire Rope Systems • Electrical Wires and
Cables • Suspension Bridges and Cables
Wire Cloth and Netting



ROEBLING
PRODUCTS



Flat Wire



Shaped Wire



Strip Steel



Wire Rope



Electrical Wires
and Cables



Woven Wire Fabrics

ROEBLING

PACEMAKER IN WIRE PRODUCTS

PERMANENT MAGNETS MAY DO IT BETTER



(This is the second of three advertisements regarding permanent magnetic materials.)

ALNICO ALLOYS (Grades I-IV)

The precipitation-hardening alloys known as Alnico are composed of aluminum, nickel and iron, with the addition of cobalt and copper in some grades. Composition is varied to adapt the material to a wide range of requirements. All grades of Alnico have comparatively high coercive force, moderate residual induction (except Alnico V, which is high in both) and high available energy.

The Alnicos are hard, brittle, coarse-grained, non-forgeable and non-machinable. They are cast from coreless induction furnaces in sizes ranging from 1/10 ounce in weight to 110 pounds. Sintered Alnico is a mixture of powders of the constituent metals molded to desired shapes under extreme pressure. It is less brittle than the cast type, fine-grained, and can be produced in weights between 1/150 ounce and 3 pounds.

Close control of all steps of production is essential for obtaining the highest magnetic efficiency in the Alnico alloys; they must be poured over a narrow range of temperature, heated to just under their melting point for a measured period of time, cooled at a controlled rate and annealed at precisely controlled temperatures.

Better permanent magnet materials make possible improved operating results in many devices. Many products now using permanent magnets of less efficient materials should be re-designed to capitalize the latest developments. Consult our engineers on your problems in product design to get the best solution to your permanent magnet requirements. Write for technical handbook: "Permanent Magnet Manual."

*** **THE INDIANA STEEL**

6 NORTH MICHIGAN AVENUE, CHICAGO 2, ILLINOIS



PRODUCTS COMPANY ***

Copyright, 1946, The Indiana Steel Products Co.
SPECIALISTS IN PERMANENT MAGNETS SINCE 1910



Frankly, we're fishing, too . . .

for new uses for Activated Carbon

Is your problem one of these?

- Air Conditioning?
- Solvent Recovery?
- Gas Purification?
- Deodorization?
- Decolorization?
- Fractionation?
- Isolation of Organic Chemicals or Drugs?
- Catalysis or Catalyst Carriers?

Activated Carbon is one of the most versatile and adaptable *adsorbents* known. As such its wide range of usefulness is constantly expanding.

Pittsburgh Coke and Chemical Company, as one of the largest manufacturers of Activated Carbon, produces a *superior* product in a variety of types, sizes and grades as required. Our technical staff has had much experience in the application of Activated Carbon for adsorbent purposes.

But frankly, these practical applications are becoming so diversified that it is quite impossible to know about all of them.

When the extensive use of an adsorbent is indicated, in refining, manufacturing or processing, Activated Carbon may offer advantages of economy and efficiency. We would like an opportunity to learn about your problems.



Chemical Sales Division

Pittsburgh Coke & Chemical Company

Grant Building

Pittsburgh, Pennsylvania



Swinging from a
finely regulated
wartime production schedule to
meet the flood of peacetime de-
mands for ABBOTT BEARING
BALLS has really got us hopping.

We've added floor space . . .
more equipment . . . we're shak-
ing our plant apart to get your
orders out. It's awful . . . but
we're doing our level best.

THE ABBOTT BALL COMPANY • HARTFORD 10, CONN.

ROLL ON ABBOTT
Bearing **BALLS**

(Continued on page 342)

president in charge of operations. Mr. Fogarty succeeds W. H. Funderburg, who retired because of ill health; but will remain in advisory capacity temporarily.

Carboloy Co., Los Angeles, Calif. office: Machinists' Tool & Supply Co., 3690 Santa Fe Avenue, has been named an authorized distributor. A. C. Johnson has been appointed sales manager in charge of the Carboloy operation.—Akron, Ohio office: Manufacturers Rubber & Supply Co., 380 South Broadway, has been appointed authorized distributor in the North Central Ohio area. G. F. Leahy has been placed in charge.

Edward Valves, Inc., East Chicago, Ind. R. A. Durand, formerly assistant sales manager, has been advanced to the posi-



tion of Sales manager. He has been a member of the engineering sales organization for more than nine years.

Pittsburgh Plate Glass Co., Pittsburgh, Pa. H. E. Wainwright has been named account representative for the New York area. His headquarters will be in Brooklyn. K. E. Whitekettle has returned as supervisor of brush sales, after serving with the Army Air Corps.

Chandler-Evans Corp. Division Niles-Bement-Pond Co., West Hartford, Conn.



Colonel G. R. Stanley, formerly of the 20th Air Force on Guam, has been named a member of the sales staff.

Bristol Co., of Canada, Ltd., Toronto office: Charles Webber has been named managing director in complete charge of the Canadian factory at 71-79 Duchess Street, Toronto, Ontario.

Bristol Co., Cleveland office: H. A. Van Hala has been appointed district manager. Mr. Van Hala has been transferred from the Birmingham office where he had been district manager since 1935.

ANNOUNCEMENT

We are pleased to announce that, effective
May 1, 1946, our wholly-owned sales company,

CONSOLIDATION COAL COMPANY

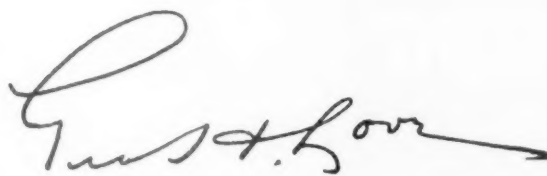
will market all coal produced by our operating subsidiaries, Pittsburgh Coal Company of Pa., Consolidation Coal Company of W. Va., Consolidation Coal Company of Ky., and Clover Splint Coal Company, which company will be merged with Consolidation Coal Company of Ky. at an early date. This sales company will also market the output of Elk Horn Coal Corporation, Pursglove Coal Mining Company and coals produced by several other operators.

The officers that will be in charge of CONSOLIDATION COAL COMPANY have all been associated with Pittsburgh Coal Company, Consolidation Coal Company, Inc., or affiliated companies for many years. The General Sales Office will be in the Koppers Building, Pittsburgh, Pa., with a division of the General Sales Office handling Kentucky coals located at 333 North Michigan Avenue, Chicago, Ill.

With this combined organization, we will be able to offer many advantages, better service, and will do our utmost to merit your good will.

PITTSBURGH CONSOLIDATION COAL COMPANY

PITTSBURGH, PA.
APRIL 12, 1946



PRESIDENT



Fasteners for Farm Machines

If your products wind up down on the farm, where hard treatment, vibration and exposure to the elements subject them to undue punishment, it will pay you to specify STERLING when ordering fasteners.

The process by which STERLING fasteners are mass-produced offers you the utmost in economy *plus* additional strength for a more solid, vibration-proof product.

STERLING products are well fitted for virtually every type of fabrication, and measure up especially well to the exacting demands of agricultural equipment production. Next time you buy—Specify STERLING.

Some of Our Products

MACHINE SCREWS	STOVE BOLTS
CAP SCREWS	STEP BOLTS
CARRIAGE BOLTS	NUTS OF ALL
MACHINE BOLTS	TYPES and SIZES



Sterling products are used for thousands of applications in scores of industries—everywhere bolts and nuts are specified.

STERLING BOLT Company

213 West Jackson Blvd.
CHICAGO 6, ILL.

INDUSTRIAL DEVELOPMENTS

Reliable Spring & Wire Forms Co., Cleveland, Ohio, has installed an employee bonus plan to stimulate production. The company proposes to distribute among its employees the total annual operating profit over and above six per cent on sales, after deduction for taxes, employee pensions and insurance previously set up. Bonus payments will be governed by ordinary earnings of employees and length of service.

Federal Machine & Welder Co. has acquired control of the Sommer & Adams Company and will operate it as a separate corporation manufacturing special machine tools. J. A. Wagner, formerly vice president of engineering and sales of the Advance Tool and Die Co. of Detroit, has been elected vice president and manager of Sommer & Adams Company.

Belden Manufacturing Company, industrial wire and cable manufacturers, announces proposed expenditure of \$1,150,000 on additions to its Chicago and Richmond properties. When additions are completed, company will have a maximum capacity to consume 27,000,000 pounds of copper annually.

Caterpillar Tractor Co. announces that it will enlarge the floor area of its Peoria, Ill. plant by nearly 50 per cent. Completion of the program will add approximately 180,000,000 square feet of floor space—about 41 acres—to the plant. Manufacture of Diesel engines is the major project in the program, which is expected to be completed for the summer of 1948.

Joseph W. McLean, who retired as president of Simonds Abrasive Co., Philadelphia, last November, passed away on March 7th in Philadelphia from an extended illness. He had been associated with Simonds since 1901 when he became a clerk in the Chicago branch.

The Emerson Electric Mfg. Co., St. Louis, Mo., has announced its postwar expansion program which involves moving all manufacturing and office facilities to one of St. Louis' newest and most modern plants at 8100 Florissant Ave. All operations will be consolidated at this \$5,000,000 plant on completion of the scheduled move in September. An increase in available work space at the new plant is estimated at about 50%, but production increases are expected to range up to 200% on some products.

Reliance Electric & Engineering Co., Cleveland, Ohio, in announcing its acquisition of a 25 acre site, stated that a new plant will be erected in Ashtabula, Ohio. The new plant, which will cost \$750,000 and with machinery and equipment will represent a total investment of about \$1,500,

PURCHASING

000, will contain 120,000 sq. ft. of manufacturing area. It will be used for the production of 1 to 15 hp. electric motors and V*S drives.

General Electric Co., Pittsburgh, Pa., has announced the start of construction of a glyptal alkyd resin plant at Anaheim, Calif. Plant was designed and is being constructed by Chemical Plants Div. of Blaw-Knox Co., Pittsburgh, at a cost of over \$500,000. Resins will be used by G.E. in the manufacture of paint bases.

International Nickel Co., Inc., New York City, has opened the Empire State Technical Section of its Development & Research Division in the Genesee Valley Trust Bldg., Rochester, N. Y. Section is under direction of Gilbert L. Cox, Metallurgist and chemical engineer.

Westinghouse Electric Corp., Sharon Transformer Div., announces organization of a Specialty Transformer Department. Chris H. Bartlett has been appointed manager; A. E. Black, general foreman; and Frank E. Baker, section engineering manager.

Curtis Lighting, Inc., Chicago, Ill. Melvin C. Witt, formerly executive vice president, has been elected president. During the war he served as Lieutenant Commander in the Supply Corps, U.S.N.R., but returned to Curtis Lighting on release from active duty in November, 1944. He replaces Darwin Curtis who is now Chairman of the Board of Directors.

Bowser, Inc., Refrigeration Div., has been moved to enlarged facilities from Woodside, N. Y., to Terryville, Conn. T. J. Lopiccolo will continue as Chief Engineer, with Ralph Hayes as Production Chief and E. S. Ronk as coordinator of sales and advertising.

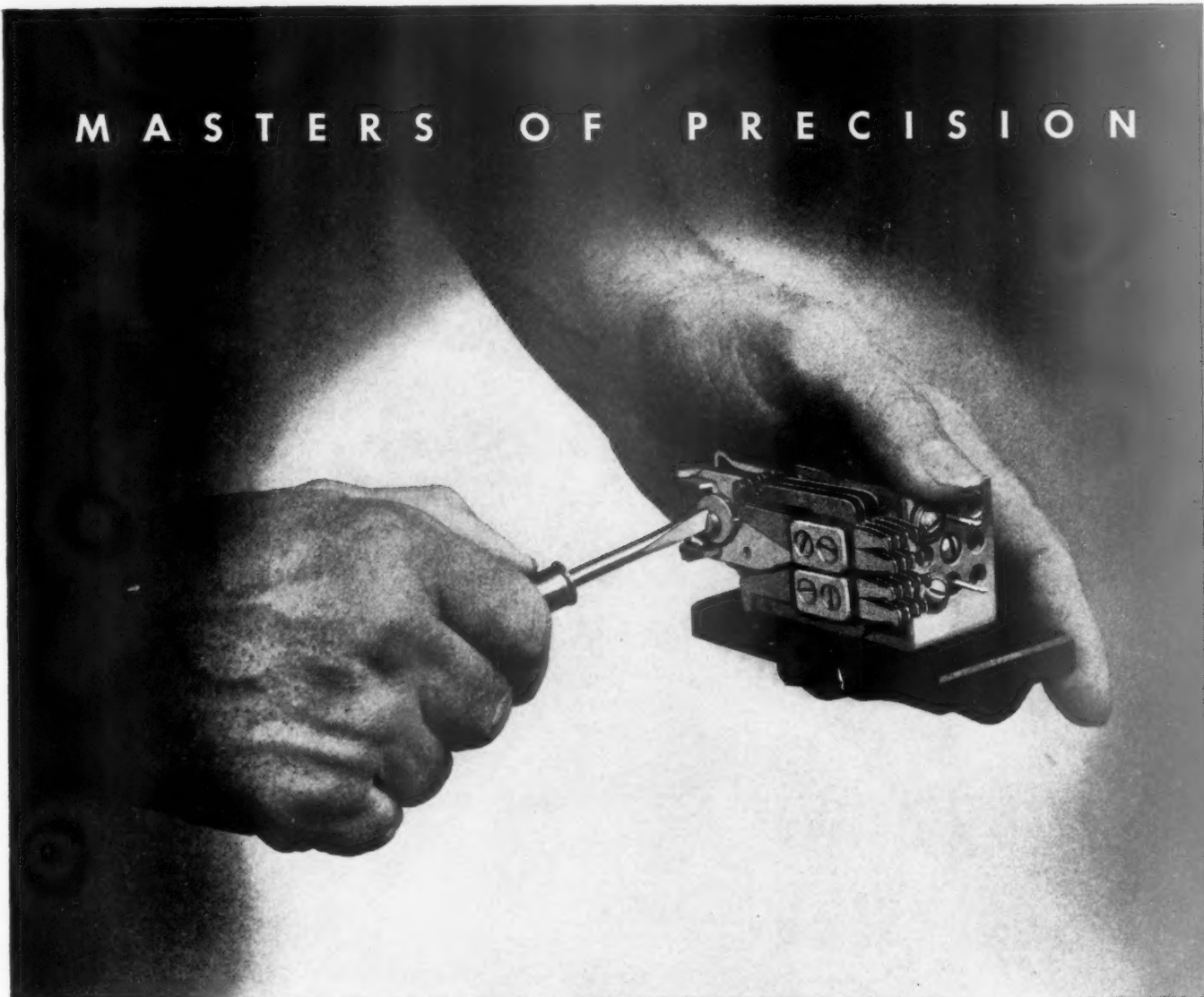
Red Head Products Co. is new name for Rich Red Head Rivet Set Div. of Mott Steel Products Corp. Allen Aikens, formerly sales representative of the Dockson Corp., Detroit, recently purchased and reorganized the division, which will operate under his management with headquarters at 14285 W. Eleven Mile Rd., Royal Oak, Mich.

Newcomer Products, Latrobe, Pa., has announced that strain-free brazed tools of cemented carbide produced by the company will be distributed on national scale through the Greenleaf Corp., Wilkesburg, Pittsburgh 21, Pa.

Westinghouse Electric Corp. Consolidation of facilities of Westinghouse Air Conditioning Division and B. F. Sturtevant Co., purchased by Westinghouse in 1945, has been effected by transfer of the Air Conditioning Division from Jersey City, N. J., to the Sturtevant main plant at Hyde Park, Boston, Mass. Ellis L. Spray, Westinghouse vice president in charge of elevator and air conditioning divisions, has been elected president of the new organization known as the B. F. Sturtevant.

(Continued on page 352)

M A S T E R S O F P R E C I S I O N



Meeting Rigid Specifications for Dependable Metals

Producing "tailor-made" metals for products built to exacting standards is everyday procedure for Western Brass Mills. One of these metals, Super-X Nickel Silver, is meeting many rigid individual specifications for a wide variety of vital functional uses.

If your needs call for an alloy that can be

blanked, drawn, spun, formed, machined or pierced, use Super-X Nickel Silver.

Our mills are conveniently located at East Alton, Ill. and New Haven, Conn. We would appreciate an opportunity to discuss your requirements for Nickel Silver and other copper-base alloys.

WESTERN BRASS MILLS

DIVISION OF OLIN INDUSTRIES, INC.

East Alton, Illinois

BRASS • BRONZE • PHOSPHOR BRONZE • NICKEL SILVER • COPPER





Put HARSHAW into your NEW PRODUCTION PLANS...

JUST as your experiences in prewar and wartime manufacturing now help you in your new production planning, so likewise does Harshaw apply similar experiences in developing and manufacturing chemicals to help you. ★ Through decade after decade, persevering research and field investigation have enabled Harshaw to supply thousands of manufacturers with hundreds of chemicals which perform satisfactorily in their manufacturing processes. ★ Include Harshaw chemicals in your production plans for today and tomorrow. ★ You can order them with confidence.



SEND FOR:

*32 page booklet listing
Industrial Chemicals*

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES



NEW RUBBER TECHNIQUES

open the doors to new and better products

- Extensive research and experimentation, accelerated by wartime necessity, introduced entirely new techniques in testing and evaluating rubber compounds for specific product development objectives.

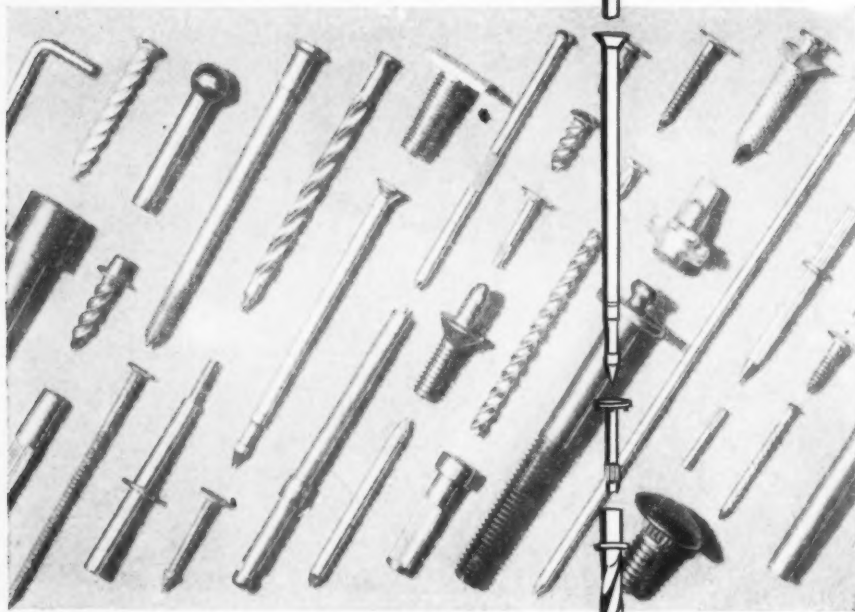
More accurate determination of the resilience characteristics of all types of commercially obtainable rubbers under both static and dynamic conditions is one of the numerous achievements of rubber technicians. Continuing developments in the curing of rubber with dielectric heat, injection molding of rubber, new methods of testing the comparative chemical and physical properties of all types of rubber open the doors to new and better products. Improvement of visual design ("eye appeal"), increased functional efficiencies, and more accurate production controls at lower unit costs are among the activities of ORCO technicians.

If you are alert to the fact that even ONE small improvement in a product may strengthen your competitive position appreciably, ORCO technicians offer their cooperation.

THE OHIO RUBBER COMPANY

Factories: Willoughby, Ohio • Long Beach, California • Conneautville, Pennsylvania
Branches: Detroit • New York • Chicago • Indianapolis • Boston • Cleveland

Specialties



Cold-forged at a saving

Do you need a special rivet, nail or threaded part in the assembly of your product? We are equipped to make it by cold-forging—a method that offers you economies even in small quantity orders. Consult us on your problem—send a sketch or sample—there's no obligation involved. Our free catalogue is also yours for the asking.

JOHN HASSALL, INC.

404 OAKLAND ST., BROOKLYN 22, N. Y.



*Special nails, rivets, screws
and threaded parts*

(Continued from page 350)

vant Co., Div. of Westinghouse Electric. G. C. Derry, former Sturtevant Co. vice president, is vice president and general manager. Other manufacturing and assembly activities will be continued at former Sturtevant plants at Camden, N. J., La Salle, Ill., Berkeley, Calif., and Galt, Ontario. The 42 offices of the Sturtevant Company will be retained and coordinated with Westinghouse distribution points and personnel.

E. W. Bliss Company has transferred its executive offices from Brooklyn, N. Y., to 450 Amsterdam Street, Detroit, Mich. The manufacturing division in the Bush Terminal section of Brooklyn will be maintained. The move is one phase of expansion program involving equipment and building expenditures approximating \$2,000,000.

Maritrop Trading Corp., Pier 2, North River, New York City, operating in the Latin American purchasing and export fields, has been organized. J. R. Kansas is president; John W. Turner, vice president; Charles Westphal, treasurer, and Fred L. Mihm, secretary.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., in cooperation with the Illinois Institute of Technology, is offering special graduate course on atomistics and applied nuclear physics to its employees as phase of a comprehensive training program.

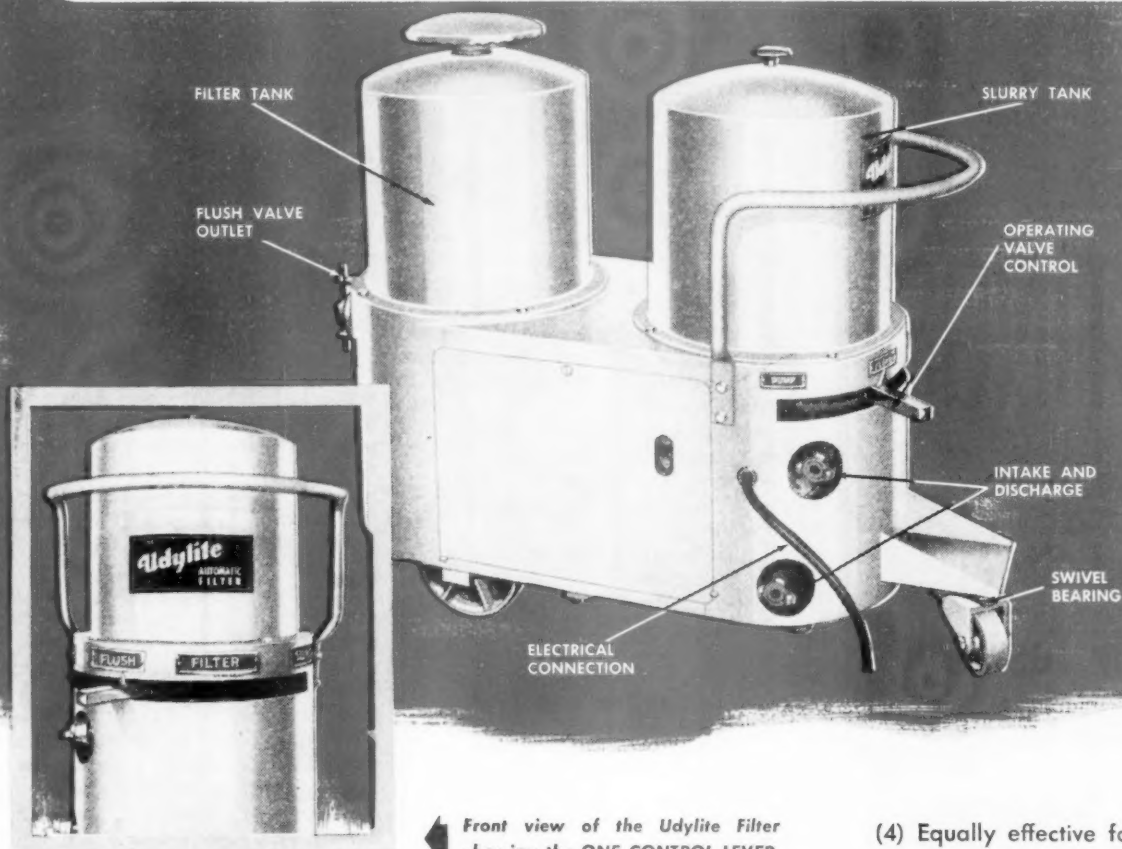
Carpenter Steel Co., Reading, Pa., has announced plans for a new, modern research laboratory to provide facilities for research and development of improved steels. The three story structure will be located at the company's mills in Reading, Pa., and will be under supervision of B. H. DeLong, vice president and chief metallurgist.

Chemical Coating Corp., New Britain, Conn., has been organized for the manufacture of specialized industrial coatings, lacquers and technical finishes, by Edward H. Christ, who has resigned as vice president, general sales manager and director of Stanley Chemical Co.

American Brake Shoe Co., New York, has contracted to purchase the Progressive Foundry Works, Inc., of Rochester, N. Y., subject to approval of the latter's stockholders. The Rochester plant has been producing specialty grey iron castings for the glass, machine tool and allied industries. It will be operated as a new division of American Brake Shoe Co., under the direction of W. T. Kelly, Jr., who is also president of Brake Shoe's Kellogg Division. Howard S. VanBiliard, president of Progressive Foundry, will remain as manager.

Westinghouse Electric Supply Company. Formation of a new district with headquarters in Rochester, and embracing Albany, Binghamton, Syracuse, Utica and Watertown, is announced. H. P. Tompkins is manager. D. J. Byrne is apparatus and supply manager. E. B. Stearns is appliance manager.

THE UDYLITE AUTOMATIC PLATING SOLUTION FILTER OFFERS YOU GREATER ECONOMY



◀ Front view of the Udylite Filter showing the ONE CONTROL LEVER.

The new Udylite filter is designed and built by plating equipment engineers especially for plating room service. It is also a complete unit including a slurry feeder as an integral element. The outstanding advantages that save you both time and operating costs in the plating department are:

(1) Just one operating control used to:

- a. Feed slurry to build filter cake.
- b. Filter.
- c. Break up and remove filter cake.
- d. Clean the filter.

e. Transfer solution from tank to tank.

(2) No replacement parts needed—nothing to wear out or throw away.

(3) No tools of any kind needed to clean the filter.

(4) Equally effective for both continuous and intermittent filtering.

(5) Suction and discharge lines equipped with quick change fittings—connect and disconnect in a quarter turn.

(6) Easily portable and readily moved anywhere in the plating department.

(7) Additional filtering aid can be transferred to filtering elements at any time without disturbing continuous filtering operation.

(8) Complete unit including slurry feeder is streamlined and easy to keep clean.

2004

Write for descriptive bulletin.

THE Udylite CORPORATION
1651 EAST GRAND BOULEVARD
DETROIT 11, MICHIGAN
REPRESENTATIVES IN ALL PRINCIPAL CITIES



CASTINGS

- ★ Gray Iron
- ★ Semi-Steel
- ★ High Test Semi-Steel
- ★ Any Size up to one ton

Two modern foundries equipped for fast, efficient production can meet your casting requirements.

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STEELS FOR THE IMMEDIATE FUTURE

Following is letter recently written by Maurice N. Landis, head of the LaSalle Steel Company's Metallurgical and Research Departments, to one of the company's customers on the subject of "Steels for the Immediate Future":

"I am glad to acknowledge your recent request for our opinion as to the steel specifications of the future.

"It is a difficult situation to predict and I wish you would take the following as my personal opinion only, gained from talking both to the steel producers and to the steel users like yourself who actually, by their demands, determine the grades.

"First, all appearances indicate that the AISI system of naming of steels will be followed in the future. The SAE has now adopted the AISI system except for the prefix letter. We believe this prefix letter fulfills a need in that it symbolizes the method of steel manufacture or general class of the steel such as "B" for Bessemer manufacture and "A" for Alloy, "C" means Carbon steels and "E" Electric Furnace.

"Of what is undoubtedly major interest to you is our opinion as to the most popular and most available of the generally used steels.

"In the carbon steels, we anticipate that the various grades will pretty well go along as they are now, except that C-1042 is fast replacing C-1040 and C-1045 as the medium carbon shafting steel. C-1042 is identical to C-1040 and C-1045 except for carbon which is .40% to .47%. 1020-90 (C-1019) I think will continue to be the generally used lower carbon shafting and carburizing steel. Also C-1050 is being employed where good hardenability is a must more and more.

"In screw steels we look for B-1112 to continue to be the basic free machining steel with B-1113 being used more and more when screw machines are able to take advantage of its superior machinability.

"We look for little change in the open hearth free machining steels. C-1117 (the former X-1314) should continue to lead for those applications where ready machining and open hearth quality are required. C-1137 (formerly X-1335) is still a popular quenching, free machining steel, although our Tritex No. 2 (Modified C-1144) is rapidly becoming popular where excellent machinability, superior to that of C-1137, and hardenability are requirements.

"In regard to the alloy steels, the picture is not so clear. The 8600 series seems definitely to be in, especially A-8640 and A-8617 for quenching and carburizing respectively. Also, some A-4140 is being specified and produced as well as a little A-3140. There is not much 3115, 3120 or 4120 being used now for carburizing, though the grades are sometimes available.

"Actually, the 8600 series worked very well during the war, performing fully as well as the older alloys. Further, the

scrap situation is certain to make these ternary alloys attractive to the producers.

"Other higher alloyed steels are certain to be used for those applications which actually require them. Thus A-4615, A-4640 and either A-4340 or E-4346 are almost indispensable at times. In this connection the 4300 series has met a lot of critical situations in the aircraft industry with success. We do not believe, however, that these high alloys will be as indiscriminately specified as they sometimes were in the past. Many designers have learned that the less expensive leaner alloys are fully adequate for most jobs.

"Another factor which is going to influence the future steels is the constant pressure to reduce costs. Thus if a refinement of heat treating techniques makes it possible for a shop to use carbon steel instead of alloy, a change is made to carbon. But the same refinements might make it possible to mass quench alloy steels where individual quenching of carbon is required, with the change then to alloy. Along this line the widespread adoption of induction hardening is causing a major shift from the carburizing steels, both carbon and alloy, to steels of approximately .50% carbon.

"The use of sulphur to enhance machinability of alloy is rapidly gaining ground and we are sure it will continue. Previously when raw sulphur was added, there was serious doubt among many metallurgists as to the quality of the steel produced. With the introduction of the sodium bi-sulphite process (our La-Sulphite, the doubts have largely been eliminated so that we can now say the La-Sulphite alloys are quality steels with markedly enhanced machinability. This is especially pertinent in the heat treated bar steels (La-Sulphite 8640) where considerable machinability has heretofore necessarily been sacrificed to produce a strong tough steel.

"I could not close a letter to a Stressproof user like yourself without stating that the use of this general all purpose steel is steadily expanding and we certainly expect it to continue to do so.

"Please remember that these are only my opinions as of today, and the only certainty is that new steels will be developed while old favorites will disappear."

1 1 1

EXTEND STOCKPILING PERIOD FOR STRATEGIC MATERIALS

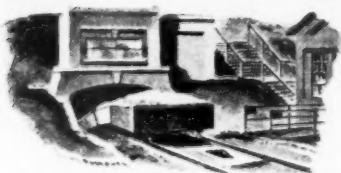
The period for stockpiling strategic materials, minerals and metals needed by the Army and Navy for defense purposes has been extended to July 1, 1946, War Assets Administration announces.

Provisions for the extension were contained in an amendment to SPA Regulation 17 advancing the rescission date of the regulation from April 1 to July 1.

As outlined in the basic policy of the regulation, stockpiling of surplus stra-

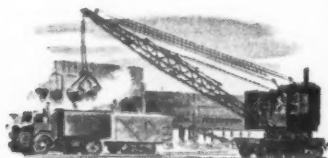
(Continued on page 358)

Would You Think a Man Could Lift 75 Tons? (He couldn't—without wire rope)



They use a lot of wire rope in and around coal mines. One important ground use is for car spotters and retarders. Preformed wire rope is easier and safer to handle.

He's lifting 15,000 feet of heavy steel drill pipe—no wonder he keeps his eye on the wire rope. Running at high speeds, wire rope tends to whip and pile up on the drum. This crushes rope and forces early shutdowns for replacement. Operators prefer Preformed wire rope because it resists whipping, spools evenly and reduces shutdown frequencies.



Power shovels scoop up earth and rock with giant bites. The wire rope makes it look easy. Being more flexible, Preformed wire rope runs over small sheaves with minimum wear.



Modern machines almost invariably are equipped with Preformed wire rope. Preformed is flexible and limber. It is tractable and free from internal tension. It handles easier, so operators like to work with it, and it lasts longer so the front office likes to order it.

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR

WIRE ROPE HANDLES EASIER - LASTS LONGER

"I'm sick of card tricks!"

Typing cards is the most frustrating job in the world. Put them in, take them out; put them in, take them out—how can a girl make any speed? Besides, they don't stay put, and the last line always seems.....



No, you've never seen them before, because they're new. Available in strips of 100, 250 and 500 cards . . . in six colors, four standard sizes. Quantity purchases can be printed and designed for your specialized needs. *Test-proven to cut typing time by 30 to 50 per cent.*

The ink is just dry on our descriptive folder. Will you have one of the first copies—and samples?

HOLLER'S LINK-CARDS

Patent applied for

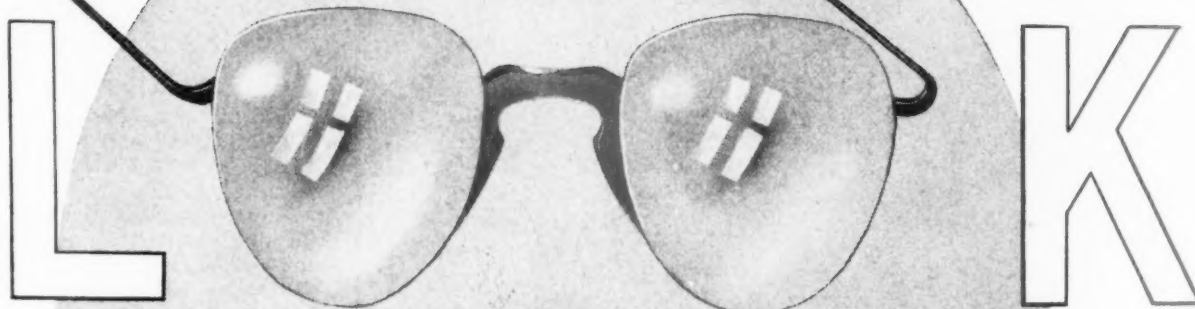


We see what you mean...
That's the why of
HOLLER'S LINK-CARDS...

...the perforated
strip file cards...

Feed them into your
machine in a contin-
uous strip, separate
them later.

NEED STAINLESS STEEL PLATES?



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Furnished in all standard
AISI types, including the
following:

Type 309	Type 316Cb
Type 309S	Type 317
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All plates regularly furnished annealed and pickled. Straight chrome grades pickled by the sodium hydride process which removes scale without attacking the metal surface.

Special analyses developed to meet special requirements. For competent engineering aid, consult the nearest JESSOP office.

**STANDARD SIZES OF
JESSOP STAINLESS STEEL PLATES**

Thickness	Max. Length	Max. Width
3/16" (.1875)	240"	48"
	192"	48"
1/4" (.250)	144"	48" to 66"
	240"	66" to 72"
5/16" (.3125)	192"	48"
	240"	48" to 72"
3/8" (.375)	192"	48"
	240"	48" to 72"
7/16" (.4375)	156"	48"
	240"	48" to 72"
	216"	36"
1/2" (.500)	144"	48"
	240"	48" to 72"
	180"	36"
9/16" (.5625)	120"	48"
	216"	48" to 72"
	156"	36"
5/8" (.625)	108"	48"
	204"	48" to 72"
	144"	36"
3/4" (.750)	96"	48"
	168"	48" to 72"
	120"	36"
7/8" (.875)	84"	48"
	144"	48" to 72"
	108"	36"
1" (1.000)	72"	48"
	120"	48" to 72"
	96"	36"
		48"

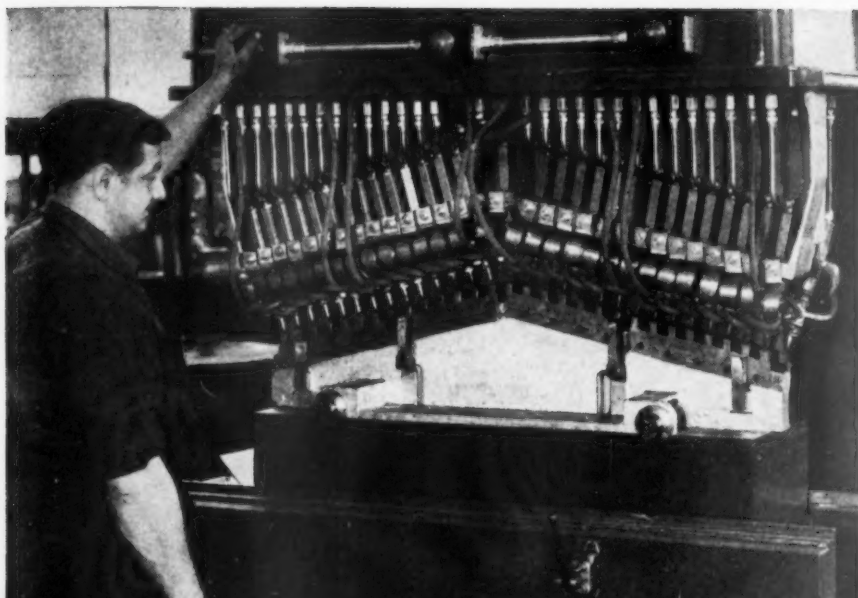
Because of variations possible with existing equipment, additional sizes not shown above can be furnished.

JESSOP STEEL COMPANY

Head Office and Works . . Washington, Pa.

**BRANCH OFFICES
IN PRINCIPAL CITIES**

MANUFACTURERS OF HIGH GRADE SPECIALTY STEELS



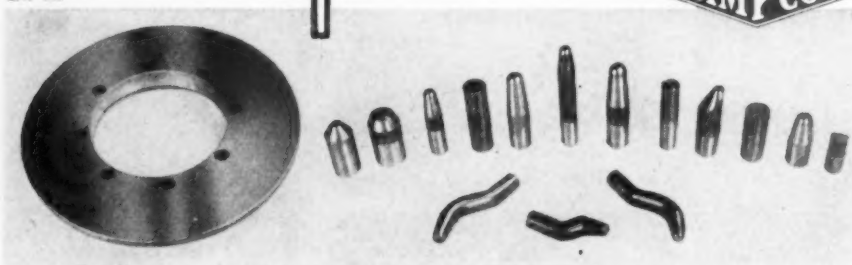
6000 spot welds per hour
with Resistance Welding
Electrodes of Ampcoloy

AMPCO

Resistance Welding
Products include...

- spot-welding electrodes
- seam-welding wheels
- centrifugally-cast seam-welder bushings
- seam-welder shafts
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- extruded and drawn rounds
- plus many others

BW-4A



Controlled quality and uniformity eliminate costly production losses

This Hydromatic, spot-welding grille bars to a grille frame at the rate of some 100 assemblies per hour, demonstrates that the controlled quality and uniformity of Ampco spot-welding electrodes result in increased production and lower cost for you.

At Ampco, all resistance-welding products comply with RWMA specifications. Control of quality and uniformity — both absolutely necessary in this exacting field — are kept under close supervision of laboratory technicians throughout the entire production cycle.

You reduce your welding costs and increase your production when you specify Ampco's *uniform* welding electrodes. Complete details are given in Bulletin 68.

Write for your copy today.

Ampco Metal, Inc., Dept. P-5
 Milwaukee 4, Wisconsin
 Field offices located in Principal Cities



(Continued from page 354)

tegic minerals and metals, other than fabricated articles, is mandatory. Stockpiling of fabricated articles composed chiefly by value of strategic minerals and metals depends on Army and Navy requirements. Strategic materials must be stockpiled also unless the Army and Navy Munitions Board decides that they do not meet specifications for common defense or are in excess of the needs.

Four Exemptions

There are four exemptions from the stockpiling requirements: contractor inventory; reserves of strategic minerals and metals equal to the civilian deficiencies estimated by the Civilian Production Administration; lots less than set minimum quantities; valueless items.

Recently, CPA reported an acute civilian shortage of copper and copper base alloys and said that all available stocks of such metals in scrap form which could be sold at ceiling prices would be required to alleviate the situation. War Assets Corporation, WAA predecessor, immediately issued an order for owning agencies to sell the metals rather than declare them surplus to WAC, a measure designed to save time in relieving such shortage and fill the needs of civilian industry.

1 1 1

SILICONE ANTIFOAM PRODUCT ANNOUNCED

A new Dow Corning silicone product known as DC Antifoam A, is announced by the Dow Corning Corp., Midland, Mich. It was developed especially for use against foam in aqueous solutions and emulsions. Tests show that it eliminates or reduces the foaming of various aqueous solutions even when they are subjected to steam distillation or vacuum concentration. The tests also established that DC Antifoam A is effective in very low concentrations, ranging from a maximum of 1 part per 10,000 against strong foamers to 1 part in a million against weak foamers.

Among the solutions and emulsions in which it is effective are: alkaline black liquor, rosin soap solutions, sodium oleate and sodium alkyl sulfate solutions, Aerosol OT, cutting oil emulsions, egg albumin and various synthetic rubber latices. It is pointed out that it is impossible to predict the effectiveness of Antifoam A or any other foam inhibitor in a given application without trying it.

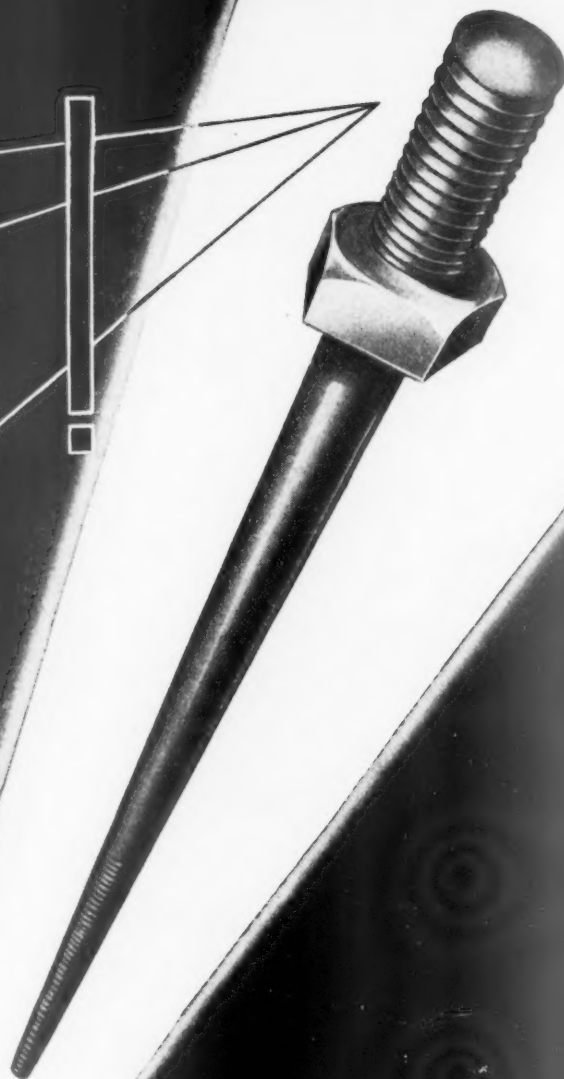
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SOUND FILM ON MILLER

"The Miller that Uses Its Head" is the title of 16 mm. color-sound-movie announced by Nichols-Morris Corp., 50 Church St., New York, N. Y. It is not a "how-to-operate" film, rather it is an analysis of the Nichols hand miller from the tool engineer's point of view. It runs for 23 minutes, showing many different kinds of tooling and fixture design from simple stock fixtures to completely automatic fixtures.

SPECIALS!

**... convincing
evidence of
manufacturing
skill**

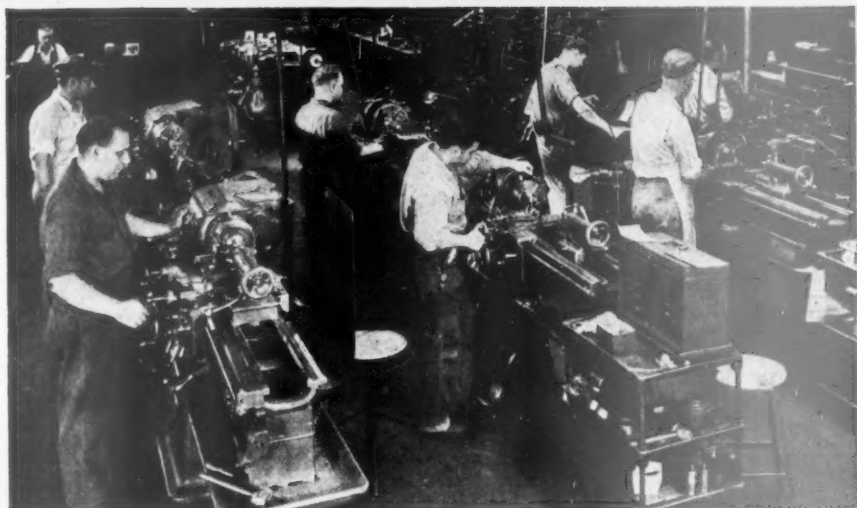


● The complexity of modern, manufactured items reflects itself in the increasing demands for special type nuts and bolts. The unusual bolt illustrated, for example, is a vital part of the compressor unit of a national brand refrigerator.

Years of experience plus the fact that all circle B fasteners are controlled from billet to bolt in one single plant—the largest independent in the country—naturally make the Buffalo Bolt Company the logical starting point for any producer with a nut or bolt problem.

Whether they are standard or special, all circle B products have the same uniform, controlled quality that serves to make your production more efficient ... your products more salable.

Did You Know that we have our own large machine shop where dies are carefully made by our own skilled toolmakers?



BUFFALO BOLT COMPANY

NORTH TONAWANDA, N. Y. • SALES OFFICES IN PRINCIPAL CITIES
Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

We're not "Devil-may-care"

... and the devil on the right is proof of that! He's composed of a number of different plastic parts made by Continental. He has a plastic gearshift knob for a head. And his horns and tail are plastic handles. In fact, with every part of him goes a plastic success story.

Working with experienced care, our staff of designing and research experts solve "pernickety" product problems. The plastic parts or accessories, themselves, have all those qualities one expects in a plastic . . . lightness, strength, durability, and economy.

Remember, you can always depend on Continental's engineering "know-how". So whenever you think of plastics, be sure to remember Continental.

. . .

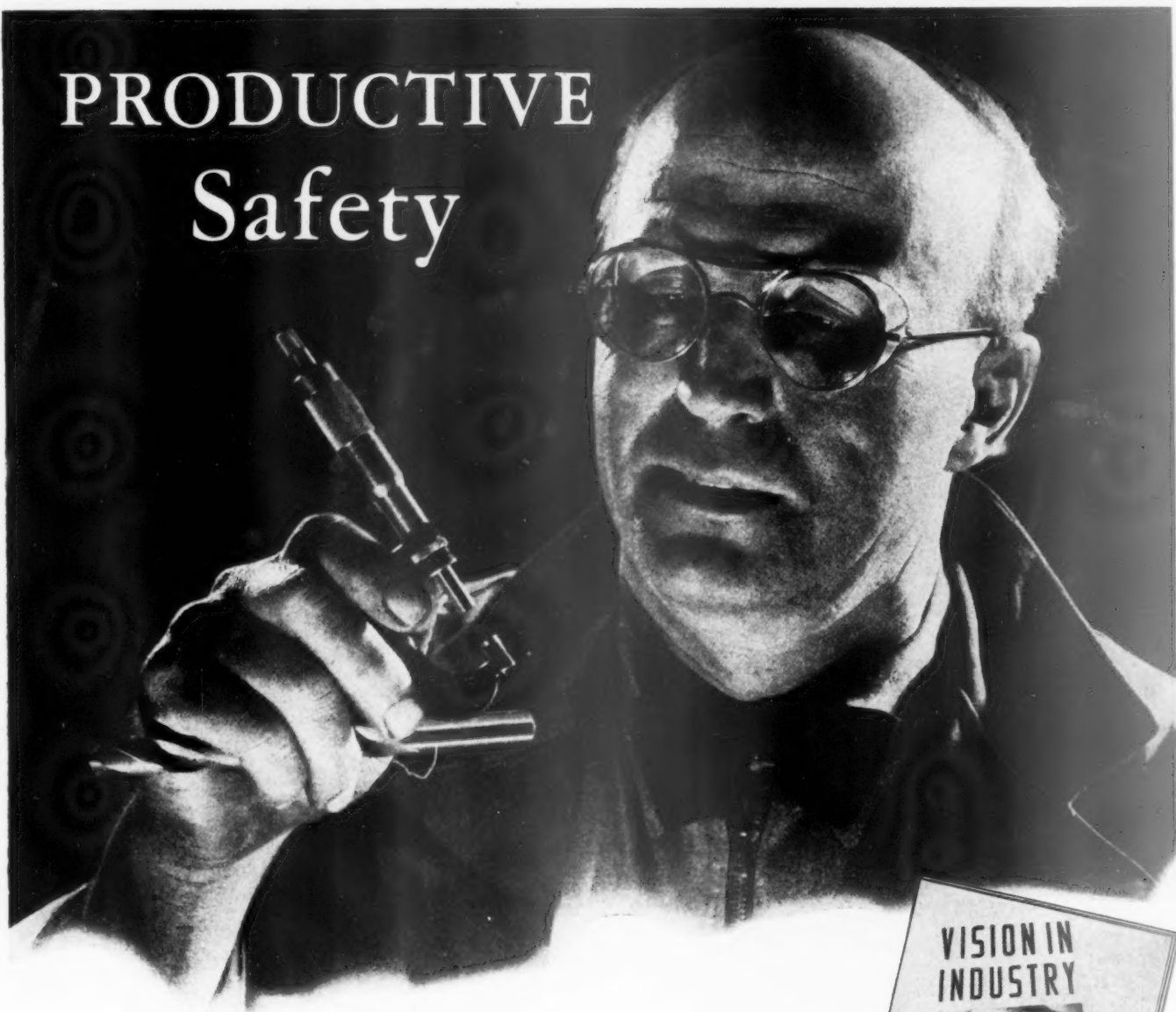
Other Continental Products: Metal Containers • Fibre Drums
Paper Containers • Paper Cups • Steel Containers
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<p>CONTINENTAL</p>  <p>PLASTICS DIVISION</p>	<p>CAN COMPANY, INC.</p> <p>HEADQUARTERS: Cambridge, Ohio</p> <p>Sales Representatives in all Principal Cities</p> <p>COMPRESSION • INJECTION • EXTRUSION SHEET FORMING • LAMINATION</p>
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PRODUCTIVE Safety



BAUSCH & LOMB Safety Lenses, professionally prescribed to the visual needs of the worker and matched to the safety requirements of the job, stimulate increased production and help keep down eye-accident layoffs.

Prescription ground safety lenses preserve and safeguard the visual skills of experienced employees . . . keep them on the job longer . . . *safely*.

Safety Glasses made by Bausch & Lomb . . . spectacle or cup type . . . are obtainable with hardened plano or prescription ground lenses . . . clear or absorptive types . . . in a wide variety of styles for every job need. Write for complete information. Bausch & Lomb Optical Co., 741-5 St. Paul Street, Rochester 2, N. Y.

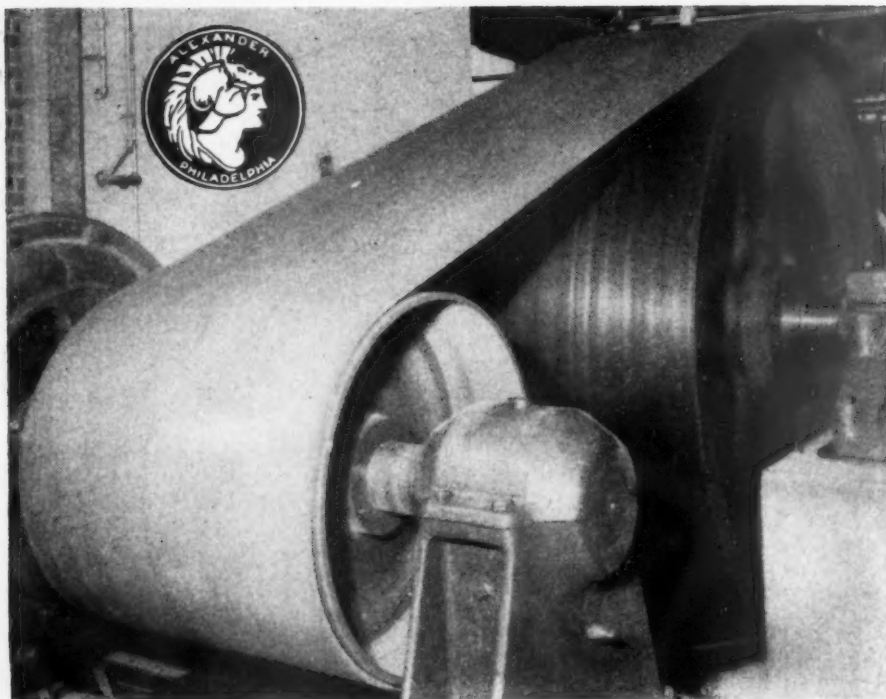


The application of the Bausch & Lomb Industrial Vision Service in your plant means: fewer accidents . . . increased production . . . improved quality . . . reduced labor turnover . . . lower training costs. Write for this booklet.

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Safety Eyewear



Important Drives Demand **MONOBELT**

MONOBELT is patented and has features found in no other leather belt. It is a modern belt engineered to give maximum efficiency. Distinctly superior for short center, pivoted motor base, and high speed drives with large pulley ratios.

Use MONOBELT for continuous output of maximum volume. Its proven capacity to deliver exceptionally high horse-power, its permanent frictional qualities, due to an exclusive currying process; its ability to absorb shock loads and overloads, demand attention.

Every process in the making of MONOBELT, from the raw hides to the finished product is under Alexander direct control. Made in all widths, each with a proportionate thickness determined by engineering practice and actual experience to be ideal.

JUST OFF THE PRESS! WRITE FOR
NEW ILLUSTRATED MONOBELT FOLDER

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TELLS OF BENEFITS OF CENTRALIZED PURCHASING

W. Lee Costigan, former alderman, Springfield, Mass., and Purchasing Agent for the Hampden Paint Co., Springfield, recently appeared before a special aldermanic committee of the city of Holyoke, Mass., to explain the advantages offered by centralized purchasing, and the experiences of the city of Springfield in channeling all purchasing through a central department.

City Lost Money

A preliminary investigation, he said, showed that 70 persons were doing the buying in 35 departments, and that some of the departments had a full time buyer. An audit showed that there was no standardization in buying, and the situation revealed loss of money to the city, extra work for all departments, and a variation in prices. In most instances, the men doing the buying were hired for particular jobs and were not purchasing agents.

Mr. Costigan stated that a national average report shows that cities are saving from 10 to 20 per cent on total city purchases through centralized purchasing, and that the department cost is one to one and a half percent of the total purchase cost.

He explained that appropriations are made yearly in the budget for a revolving fund in the purchasing department. The purchasing agent does all the city's buying, but the various departments reimburse the purchasing department for the cost of equipment purchased so that the revolving fund will remain unaffected.

Substantial Savings

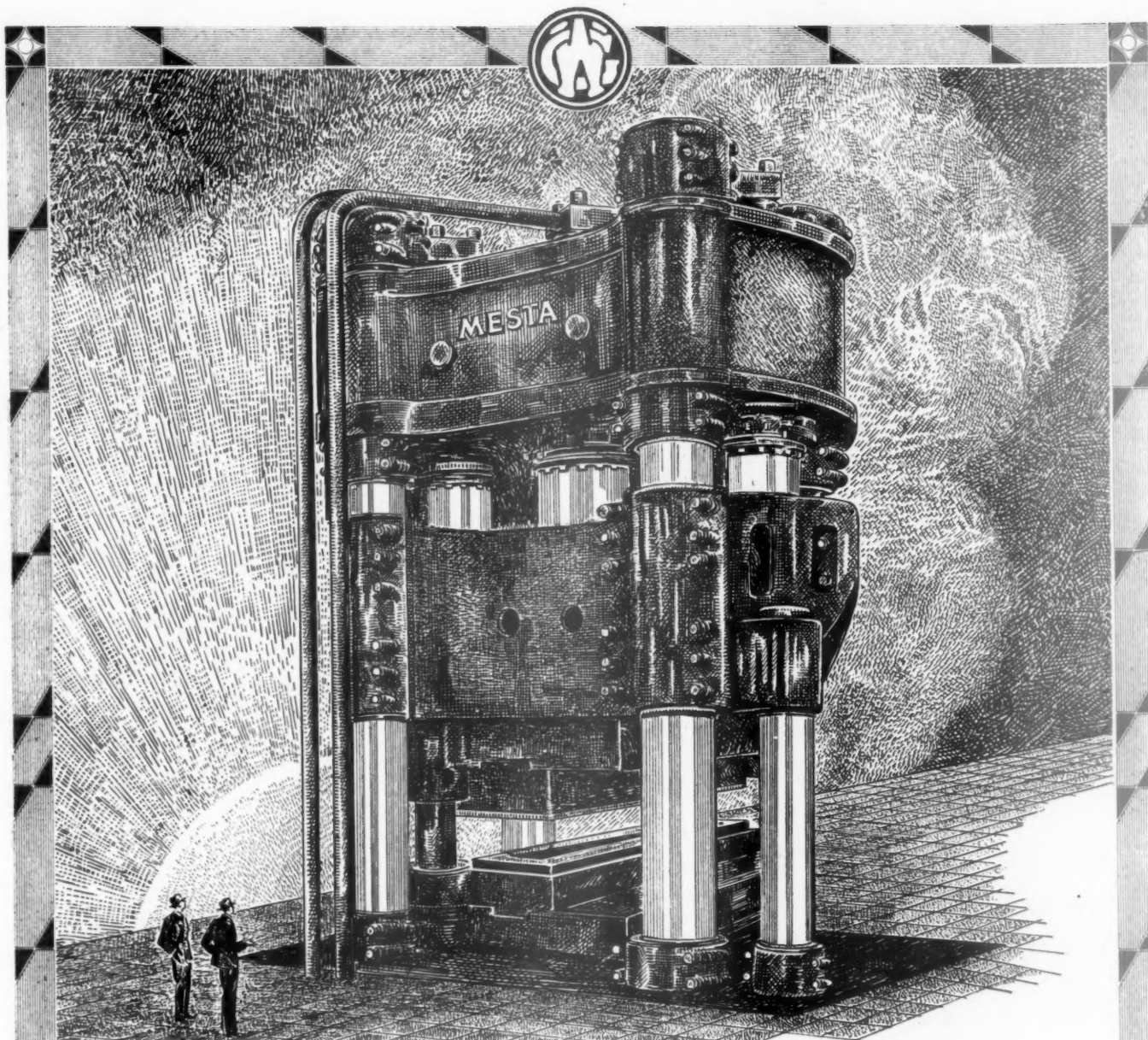
In response to an inquiry about approximate savings in Springfield by reason of centralized purchasing, Mr. Costigan reported a saving of \$5,000 on one sand purchase, a saving of \$11,000 on fire pumps, and \$3300 on fire hose, \$15,000 on trucks, and \$6,000 on tractors.

✓ ✓ ✓

SURPLUS PROPERTY DISCOUNTS NON-PROFIT INSTITUTIONS

Surplus Property Administration Regulation No. 14, November 6, 1945, entitled "Disposal to Nonprofit Institutions and Discounts for Educational or Public Health Institutions or Instrumentalities," (10 F.R.14028) has been amended by changing Section 8314.9 (b) to read as follows:

"(b) Discounts to educational and public health institutions and instrumentalities. Disposal agencies shall allow from the fair value of property as set forth in paragraph (a) a discount of forty (40) per cent upon orders by or for educational or public health institutions or instrumentalities based upon applications approved as provided in Section 8314.7; Provided, That no such discounts may be allowed to any nonprofit institutions which are exempt from taxation under Section 101 (6) of the Internal Revenue Code."



This spring, the new plant of Wyman-Gordon Products Corporation, a wholly owned subsidiary of Wyman-Gordon Company for the account of Reconstruction Finance Corporation, will be available for experimentation in and for the development and production of light metal forgings. In operation here, at an early date, the largest die forging press in the world (18,000 tons), will remove present size restrictions on magnesium forgings. This means for aircraft reduced weight which, in turn, means increased pay-load and greater performance for American planes . . . And for industry in general—complete range of magnesium and aluminum forgings.

WYMAN - GORDON PRODUCTS CORPORATION

WORCESTER, MASSACHUSETTS, U. S. A.

Nearly 4000 TYPES of Darnell CASTERS & WHEELS

It's easy to select the right caster to meet your exact requirements from the Darnell line. There are nearly 4000 models from which to choose. All Darnell Casters and Wheels are pre-tested

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LONG BEACH 4, CALIFORNIA

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Ban on New Construction

What Order Does, What It Does Not Do, Allowance
Exemptions — Industrial Exemption \$15,000

No new construction or repairs to existing structures, with certain exceptions described below, may be undertaken in the United States, Puerto Rico or the Virgin Islands, without specific governmental authorization, Civilian Production Administrator John D. Small and National Housing Expediter Wilson W. Wyatt, said in announcing the issuance of CPA of Veterans' Emergency Housing Program Order 1.

This action is taken by government to save materials desperately needed for veterans housing and is based, they said, on a thorough study of the housing emergency and the present insufficiency of building materials.

The order does not forbid or require authorization for the continuance of construction work already begun, if any of the materials which are to be an integral part of the structure have been incorporated in it on the site before March 26, the date of the order, and if the work is being carried on at that date. Construction jobs for which preference ratings have been issued under Priorities Regulation 33 of the Veterans' Emergency Housing Program require no additional authorization.

Administrator Small explained that the Civilian Production Administration is setting up in each of the Federal Housing Administration cities a CPA Construction Office. Associated with each of these CPA offices will be an advisory committee of outstanding citizens; including one recommended by the Mayor or Governor, one from the Ranks of general business (Chamber of Commerce), a representative of the builders, of building materials, the press, etc., as well as the State or District Director of the Federal Housing Administration (FHA).

What The Order Does

Except where specific authorization is given, the order *forbids* the *beginning* of construction, or repairs or changes in existing structures, public or private, in the United States, Puerto Rico and the Virgin Islands, with certain exceptions. (It does not forbid the continuance of work already begun; that is work on which materials that are to be an integral part of the structure have been incorporated into the structure on the site and which is being carried on at the time of issuance of the order).

The prohibition is effective immediately and applies whether or not the materials needed are on hand or are available without priorities assistance.

"Structure", as defined by the order, includes buildings, piers, arenas, stadia and grandstands, motion picture sets, and billboards, regardless of whether they are of a permanent or temporary nature. However, used stands or structures which are being re-erected for temporary purposes only are exempt from the order.

No person may sell or deliver materials which he knows or has reason to believe will be used in work prohibited under this order, nor may any person either carry on or participate in work prohibited by this order.

Kinds of work that are restricted by the order are: constructing, repairing, making additions or alterations, improving or converting structures or installing or relocating fixtures or mechanical equipment (heating, lighting, ventilating and plumbing equipment) in structures, which involves the putting up or putting together of processed materials, products or equipment if these items are:

- a. attached to the land or
- b. attached to a structure and used as part of it, or
- c. attached so firmly to the land or structure that removal would injure the item.

What The Order Does Not Do

(1) It does not forbid or require the authorization for the completion of construction jobs on which materials which are to be an integral part of the structure were incorporated on the site before March 26, and which are being carried on at that date. It does not require further authorization for construction jobs for which preference ratings have been issued under Priorities Regulation 33. (The Veterans Emergency Housing Program).

(2) It does not apply to repainting and repapering or to greasing and repairing or installing repair or replacements parts in existing equipment, where no change is made in the structure itself.

(3) It does not apply to roads, streets, sidewalks, railroad or street or inter-urban or plant railway tracks or operating facilities (other than buildings), fences, silos, bridges, tunnels, subways, pipe lines, power or utility lines, sewers, surface or underground mines, wells, dams or canals.

(4) It does not apply to certain repair and maintenance work in industrial, utility and transportation structures, unless such work is capitalized for taxation purposes.

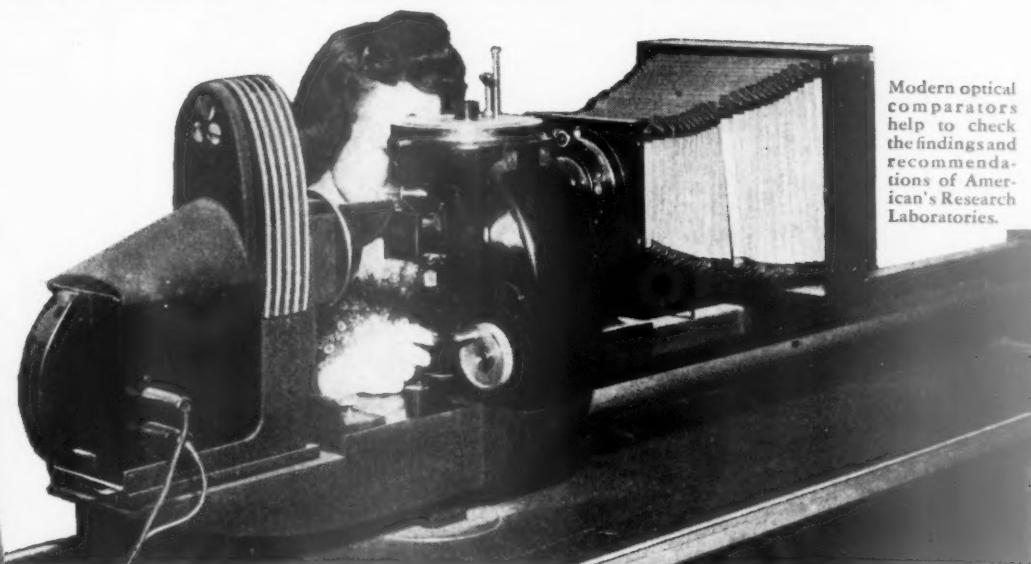
(5) It does not apply to the installation on the ground or outside a structure of any kind of equipment not attached to the structure.

(6) It does not apply to military construction or to projects of the Veterans' Administration. The Federal government is forming an inter-agency committee to screen at the source and, wherever possible postpone its own building activities.

(7) It does not apply to the minimum work necessary in disasters to prevent more damage to a structure and its contents which has been damaged by flood, fire or the like or to the rebuilding or repairing of a house or farm building when the reconstruction costs no more

(Continued on page 366)

COME TO THE "Information Center"



Modern optical comparators help to check the findings and recommendations of American's Research Laboratories.

... for recommendations on AMERICAN PHILLIPS SCREWS of the right type and metal for your job

Here in American Screw Company's Engineering Research Department are the technicians, equipment and experience to work out for you, quickly, the right answer to the question: "What kind of American Phillips Screw... standard or special... is the best one for *my* job?"

The complete American line includes all types of screws, in all the metals listed below. And if your fastening problem involves any of the *rust-resistant metals*, then American's advice is especially valuable. For American specializes in these metals,

and particularly in stainless steels of many different analyses.

So bring your problem to the "Information Center," and let American give you extra, *engineered savings* in design and metallurgy... in addition to the time-savings (up to 50%) which you always get from the American Phillips Recessed Head: Automatically straight driving, slash-proof protection for work-surfaces, and top speed and ease in handling the 4-winged driver, which fits firmly in the recessed screwhead. Write now to the Engineering Research Dept. of:

4-WINGED DRIVER CAN'T SLIP OUT
OF PHILLIPS TAPERED RECESS

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois Street

Detroit 2: 502 Stephenson Building

AMERICAN PHILLIPS *Screws*

SOLD THROUGH INDUSTRIAL SUPPLY DISTRIBUTORS



ALL TYPES
ALL METALS: Steel,
Brass, Commercial
Bronze, Stainless
Steel, Aluminum,
Monel, Inconel (silicon
bronze)

Where Sheave Breakage Means Disaster, Use "The Toughest Steel Known"

Far afield in actual application from steel mill service are the small manganese steel sheaves shown in R-838, but pretty close, in principle, just the same. Amsco foundries have made thousands of these wheels for beach gear blocks on PT boats, for hauling them over coral reefs into deep water. By casting an anchor several hundred feet ahead and attaching one end of a cable through the sheave, and the other end to an engine-driven drum, the boat is launched again.

In such a case the factor of economy is immaterial, but it is imperative that the sheave shall not break — hence the use of austenitic manganese

steel. In steel mill operations, too, it would be disastrous for a sheave wheel to collapse under the heavy weight of a ladle carrying many tons of liquid steel. In such uses the high tensile strength and ductility (toughness) of manganese steel are the best safety insurance to be had.

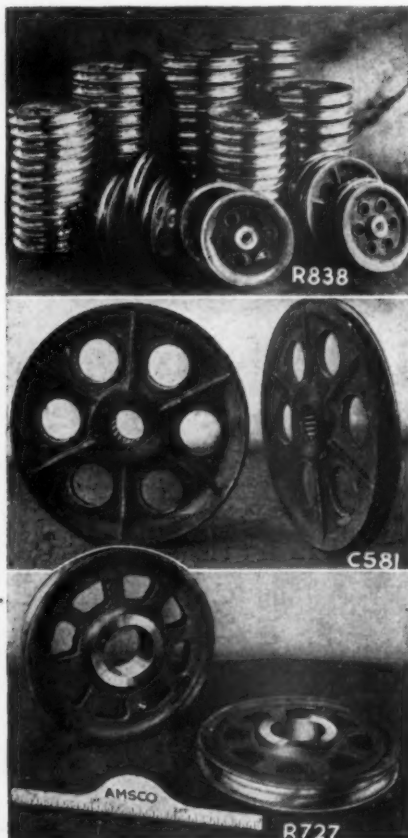
In all strenuous uses, too, the work-hardening polishing property of this steel effects an ultra-hard groove surface that gives the sheave itself a long service life, and about a 25% longer life to the wire rope operated over it. The groove resists scoring or corrugating and, therefore, does not pinch or abrade the cable.

Bulletin 1142-SM describes all the steel plant uses for "The Toughest Steel Known."

R-838 A few of many thousands of Amsco manganese steel sheaves made for beach-gear blocks.

C-581 Roller bearing sheaves, made of Amsco manganese steel, of which six are used in a hoisting block on a 250-ton ladle crane.

R-727 Double wall and double groove manganese steel sheaves. The extra groove is for a safety rope. The double wall insures maximum structural strength.



AMSCO

Foundries at

Chicago Heights, Ill.; New Castle, Del.;

Denver, Colo.; Oakland, Calif.;

Los Angeles, Calif.; St. Louis, Mo.

Offices in Principal Cities

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS • ILLINOIS

AMERICAN
Brake Shoe
COMPANY

(Continued from page 364)

than \$6,000 and is started within 60 days of the disaster.

(8) It does not apply to construction, repair, alteration or installation jobs on which the cost does not exceed the allowances listed below for particular classes of structures. Application must be made for authorization to do work in excess of these cost allowances:

Allowance Exemptions

(i) House, including a farmhouse or other structure (such as garage) or residential property, designed for occupancy by five families or less—\$400 a job.

(ii) Hotel, resort, apartment house or other residential building designed for occupancy by more than five families—\$1000 a job.

(iii) Commercial or service establishment such as office, store, garage, theatre, warehouse, radio station, gas service station—\$1000 a job.

(iv) Farm (excluding farmhouse—see "i" above)—\$1000 a job.

(v) Church, hospital, school, public building, charitable institution—\$1000 a job.

(vi) Factory, plant or other industrial structure used for manufacturing, processing or assembling; logging and lumber camp; pier, structure for a commercial airport or carrier terminal; railroad or street railway building; research laboratory; pilot plant; motion picture set; utility structure, including telephone and telegraph; oil, gas or petroleum refining or distribution (except service stations and garages)—\$15,000 a job.

In computing the cost of a job in a structure covered by the preceding paragraph (vi) the cost or value of equipment (other than mechanical equipment) and the cost of labor used to assemble or install these items may be excluded. The exclusion may not include the cost of equipment used for heating, lighting, ventilating or providing sanitary services within a building.

(vii) Other structures covered by the order but not in the above general classes—\$200 a job.

Must File Application Form

A person who wishes to begin work which would otherwise be prohibited by the order without an authorization, may apply for an authorization as follows:

1. For housing jobs, application for authorization should be made on FORM CPA-4386. Non-farm housing applications should be filed with the local office of the Federal Housing Administration, and farm housing applications should be filed with the local County Agricultural Conservation Committee.

2. For non-housing farm jobs, application should be made on CPA Form and filed with the nearest County Agricultural Conservation Committee.

3. For all other construction or repair work covered by the order, application should be made on a CPA Form and filed with the nearest District Construction office of the Civilian Production Administration.

BUILT

**FOR THE
JOB...**

FITTED

**TO THE
WORKER**



Harter Posture Chair E-31C-22

The right chair for the job is just as important as the right tools. You can't expect top efficiency from workers who are seated uncomfortably.

Harter Posture Chairs are built for the job. There is a different model for every type of work in plant, shop, and office. And every model is made to fit the individual requirements of different workers. Three separate adjustments—height of

seat, height of back, depth of back—insure custom-built comfort for each worker.

Efficiency rises, employee relations improve, when you give workers the comfort of Harter Posture Chairs. Your Harter dealer will be glad to advise you on the seating requirements of your workers. Call on him, or write us, for detailed information. Harter Corporation, Sturgis, Michigan.



HARTER

STURGIS, MICHIGAN

STEEL POSTURE CHAIRS

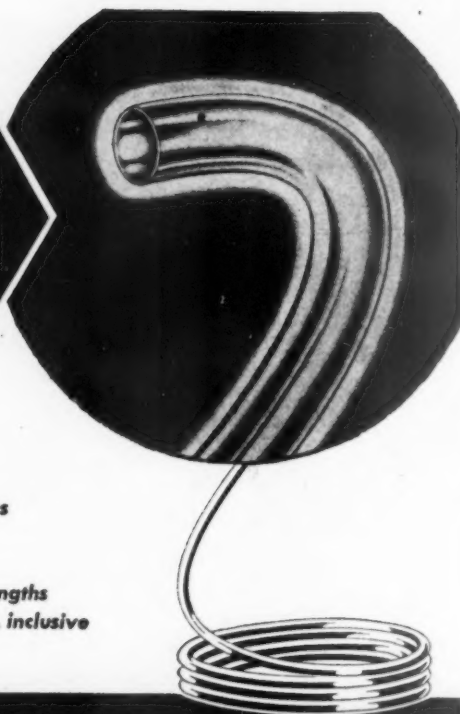
BRASS and for COPPER TUBING

You can always look to
PENN "SUPERIOR" SEAMLESS
TUBING for these important
advantages:

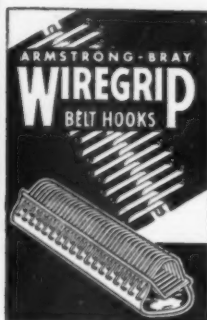
- × Uniform wall thickness
- × Bright finish inside and out
- × Annealed to your specifications
- × Easy bending
- × Ends sealed
- × Furnished in coils or straight lengths
- × All sizes from 1/16" to 1" O.D. inclusive

Write, wire or phone for data

PENN BRASS & COPPER CO.
Phone 35-111 ERIE · PENNSYLVANIA
Manufacturers "SUPERIOR" BRAND Tubing
"1920-1945 ★ OUR 25TH ANNIVERSARY"



Prompt
deliveries



both types!

WIREGRIP Belt Hooks that can be applied with any make lacing machines, have double (patented) aligning cards that hold hooks in perfect alignment, prevent handling and card-end loss — every hook saleable and usable. Made in 6 sizes.

STEELGRIP Belt Lacing is applied with a hammer. Comes in 11 sizes, in standard boxes, handy packages or long lengths for wide conveyor belts. Have 2-piece hinged rocker pins.

Write for Catalog

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

5378 Northwest Highway, Chicago 30, U.S.A.

IN
CLEVELAND
IT'S THE



HOME OF THE FAMOUS

**VOGUE
ROOM**

1000 ROOMS WITH BATH

RADIO IN EVERY ROOM

FIVE FINE RESTAURANTS

Central Downtown Location

WAR ASSETS ADMINISTRATION TO SPEED SALE OF SURPLUS PROPERTY

Broad powers to cut paper work and speed sales of surplus property have been given by the War Assets Administration to its 33 regional offices as WAA took over the functions of the old War Assets Corporation.

Lt. Gen. E. B. Gregory, AUS, who was recently sworn in as War Assets Administrator, stated that decentralization of authority was the keynote of the new organization he set up to replace WAC.

The War Assets Administration is now responsible for surplus property disposal in the continental United States and in U. S. territories and possessions. It is the disposal agency for 90 per cent of all domestic surplus.

General Gregory declared that the chief objective of the new WAA is to liquidate war surpluses as fast as possible in order to put them into the re-conversion effort and into currently short civilian markets. He emphasized five broad methods of increasing sales which WAA has authorized and will shortly put into effect as a part of its decentralization policy. These are:

(1) Each of the 33 WAA Regional Directors has broad authority to initiate sales of surplus property up to \$1,000,000 in original cost with only summary approval of Washington. Previously all sales of over \$25,000 were referred to Washington.

(2) Regional Directors have greater freedom of choice as to method of sale.

(3) All possible surplus property will be sold at fair fixed prices set for different trade levels as near as possible to comparable market prices.

(4) Procedures for the allocation of surplus items among different trade levels have been simplified.

(5) Liberal provisions have been made for effecting leases of surplus property, and for extending loans or credits in surplus sales transactions.

"Increased efforts are being made to channel all possible surplus goods into the hands of buyers given preference under the Act, including State and local governments, eligible non-profit institutions, veterans, farmers and small business," General Gregory stated. A counselling service in the field office will enable veterans to find promptly what property is available and how to buy.

The War Assets Administration is responsible for the policies under which surplus food and agricultural products are disposed of by the Agriculture Department, surplus maritime property by the U. S. Maritime Commission; surplus housing facilities by the National Housing Agency; surplus property in the territories and possessions by the Interior Department; and surplus non-industrial real property by the Agriculture and Interior Departments and the Federal Works Agency. These disposals are only a small part of total surplus activities.

So far, approximately \$14,000,000,000 of government-owned property (meas-

(Continued on page 370)

**When the tap's
in the fire . . .**



This "Greenfield" man is measuring heat with as much precision as though he was using a micrometer to measure size. He is using an optical pyrometer. On his technical skill depends to a large degree the performance of the finished product in your plant. Improved furnaces, precise heat measuring devices, and the continuing accumulation of "know-how" have made the heat treating of tool steels an exact science in "Greenfield" plants.

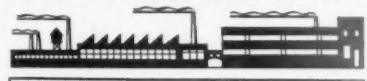
It is a science that contributes much toward your getting *more for your money* when you use "Greenfield" tools and "Greenfield's" "Show-How" field service.

GREENFIELD

GREENFIELD TAP and DIE CORPORATION
GREENFIELD, MASSACHUSETTS

Behind Every GREENFIELD Product..

LARGEST MANUFACTURING CAPACITY



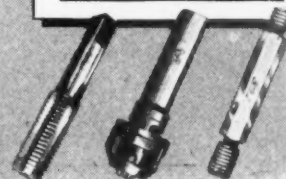
ENGINEERING AND RESEARCH



FIELD SERVICE MEN



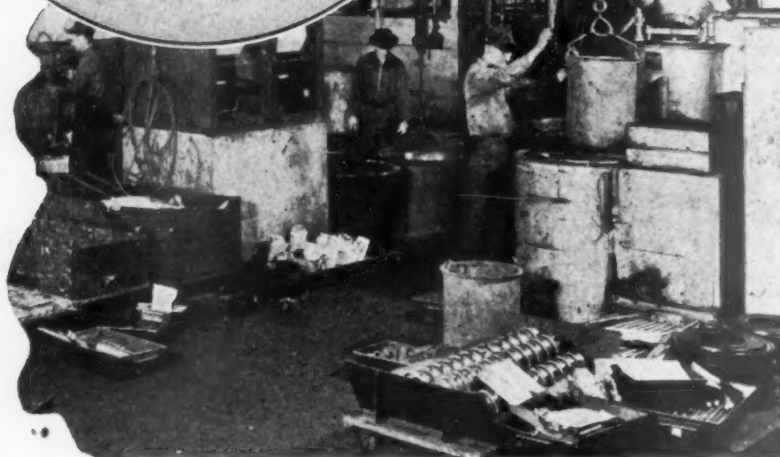
LEADING DISTRIBUTORS



CURTIS AIR HOISTS

*Save Time and
Labor at*

WARNER & SWASEY CO.



✓ Curtis Air Hoist used in operating the Cleveland Tram-rail System in the heat-treating department of Warner & Swasey Co., Cleveland.

It's another example of a well-known company relying on Curtis air-operated equipment to speed production, save time and labor, too. Curtis Air Hoists offer the following advantages to any company concerned with any lifting, pushing or pulling operation:

- Low first cost — lowest operating expense.
- Smooth, fast, accurate control of load.
- One-man or one-woman operated.
- Finger-tip control.
- Light weight — pendant, bracketed or rope-compounded types.
- Cannot be overloaded.
- Capacities up to 10 tons.

Find out how Curtis Air Hoists, Air Cylinders and Air Compressors can save man hours, cut costs in your plant. Write for Bulletin C-7.

*92 Years
of Successful
Manufacturing*

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company

1908 Kienlen Avenue, St. Louis 20, Missouri

Please send me Form C-7 on Curtis Air Hoists and Air Cylinders; also Curtis Air Compressors.

Name

Firm

Street

City Zone State

(Continued from page 368)

ured in original cost) has been declared surplus in the United States, its territories and possessions, including nearly \$5,000,000,000 of non-salable aircraft. Of this total, approximately \$2,000,000,000 has been sold and \$1,600,000,000 in non-salable aircraft has been scrapped. Dollar returns from sales have totaled nearly \$900,000,000. It is emphasized that the liquidation job has just begun.

1 1 1

NEW YORK ASSOCIATION PURCHASING COURSE

Under the direction of D. H. Lyons, chairman of the Education Committee of the Purchasing Agents Association of New York, a post-graduate purchasing course was inaugurated on Monday, April 15th, with enrollment limited to 40 members. The registration fee for the series is \$30. per member, the fee including dinners and one copy of the Book of Cases prepared for the Education Committee of the N. A. P. A. by Howard T. Lewis, Professor of Marketing, Harvard Graduate School of Business Administration.

The course has been styled a Purchasing Institute, with Harold K. LaRowe, Division Purchasing Agent, American Cyanamid Co. and subsidiaries, as general chairman. It consists of six sessions, with the following subjects and leaders:

April 15. "When and How Should Used Equipment Be Bought?"

Henry Meyer, Director of Purchases, General Bronze Corporation. Frederic W. Thomas, Assistant General Manager of Purchases, Worthington Pump and Machinery Corporation.

April 22. "Shall We Make or Buy?"

Lionel C. Mercier, Director of Purchases, Federal Telephone and Radio Corporation. Carleton Reynell, General Manager of Purchases and Traffic, Worthington Pump & Machinery Corporation.

April 29. "What Price Loyalty!"

Millard W. Merrill, Purchasing Agent, United States Metals Refining Company. Richard M. Morrison, General Purchasing Agent, The Texas Company.

May 6. "How Strengthen Relations Between the Purchasing, Engineering and Production Departments?"

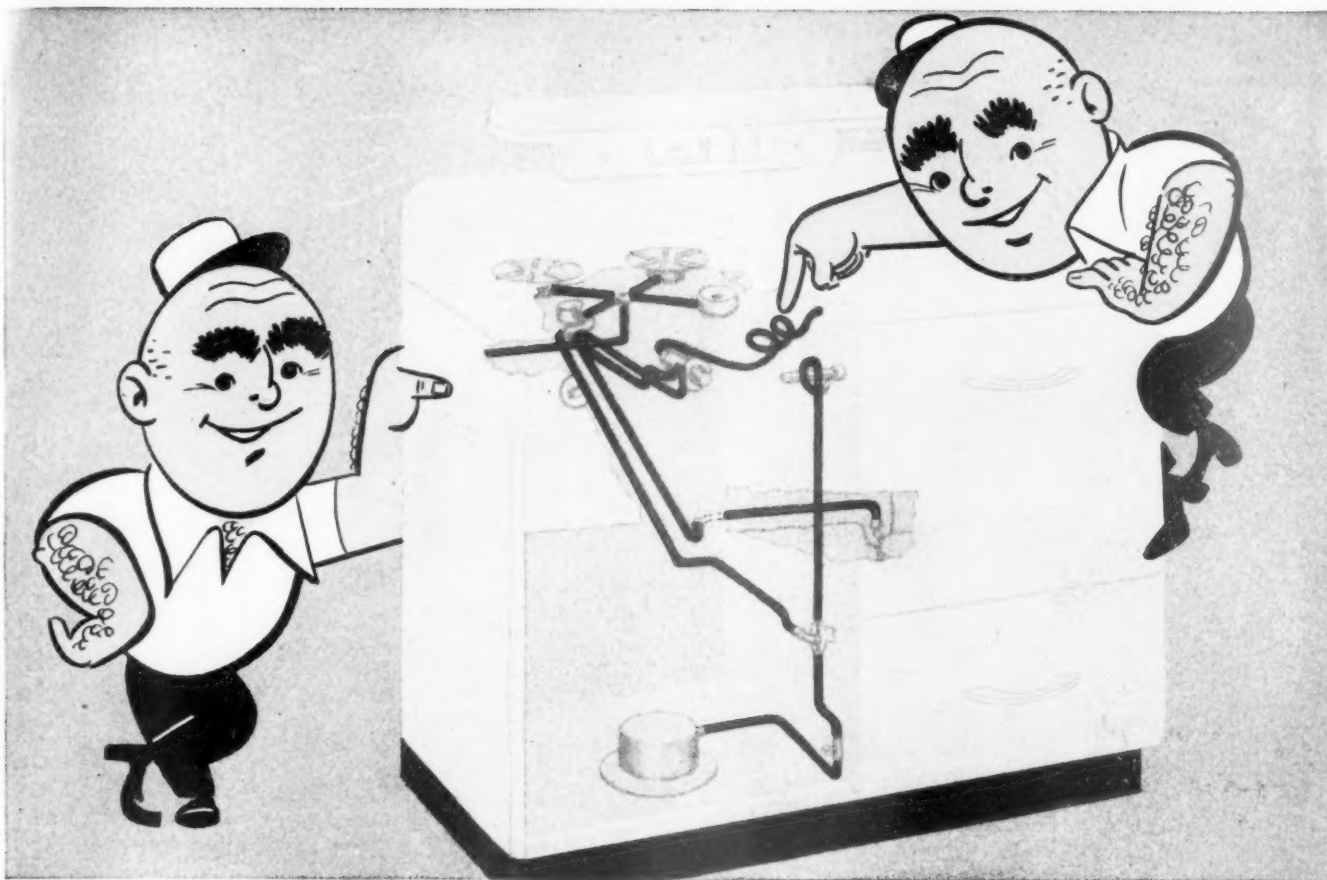
Harold W. Macintosh, Purchasing Agent, L. O. Koven & Brother, Inc. Stanley W. MacKenzie, Director of Purchases, United States Rubber Company.

May 13. "What Are Effective Safeguards on Forward Buying?"

Harvey C. Hopkins, General Manager of Purchases, American Can Company. Benedict Van Voorhis, Division Purchasing Agent, E. I. duPont de Nemours & Company.

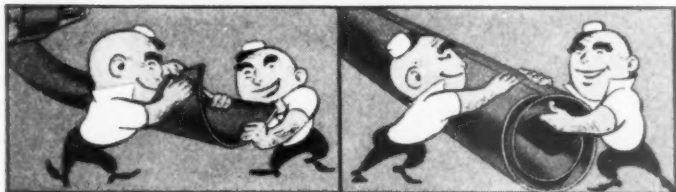
May 20. "What Sort of Reports if Any Should the Purchasing Department Make to Management?"

Norman O. Aeby, Director of Purchases, Johns-Manville Corporation. Albert J. Kelly, Assistant Purchasing Agent, Standard Oil Company of New Jersey.



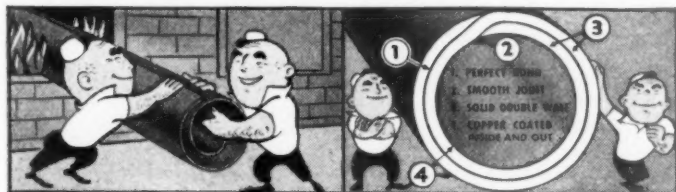
Show us the man "in the dark"

BUNDYWELD TUBING SUPERIORITY STEMS FROM AN EXCLUSIVE AND UNIQUE MANUFACTURING PROCESS



1 Bundyweld Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to 5/8" O.D. Special sizes cold drawn. Also in Monel, nickel and nickel alloys.

THAT'S right.

We are seeking men who are "in the dark"—manufacturers who use tubing, yet may not know about the many advantages which Bundyweld Tubing offers.

Chances are excellent that such manufacturers can profit by having us demonstrate Bundyweld . . . by letting us show them how Bundyweld Tubing is *superior, different . . .* because it is produced by a unique and exclusive manufacturing process.

In the gas appliance industry, for example, Bundyweld has so well demonstrated its superiority that it is now used by a majority of makers. And wherever Bundyweld is used—for conveying gases, liquids, hydraulic pressures, or vacuums—it's preferred for:

- strength, ductility, uniform tolerances.
- machinability and ease of fabrication.
- great resistance to vibration fatigue.
- high bursting point in pressure applications.
- low cost.

May we work with you on your tubing problems? Prove that Bundyweld can, most likely, serve you better and cut costs? Write *Bundy Tubing Co., Detroit 13, Mich.*

BUNDY TUBING

★ ★



★ ★

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES:

Pacific Metals Co., Ltd.
3100 19th St.
San Francisco 10, Calif.

Standard Tube Sales Corp.
1 Admiral Ave.
Maspeth, N.Y.C., N.Y.

Lapham-Hickey Co.
3333 W. 47th Place
Chicago 32, Illinois

Rutan & Co.
112 S. 16th St.
Phila. 2, Pa.

Eagle Metals Co.
3628 E. Marginal Way
Seattle 4, Wash.

Alloy Metal Sales Ltd.
861 Bay St.
Toronto 5, Canada



Frank J. Schiel, Chicago Branch Manager of Independent Pneumatic Tool Company, demonstrating Thor Portable Electric Drill and Screwdriver to Richard J. Tennes, Purchasing Agent of J. H. Keeney & Co., Inc., Chicago, manufacturers of coin operated equipment and a revolutionary new industrial counting scale soon to be introduced.

"The P. A. is All Important During the Development Stage"

"In this reconversion period the P.A. is a most important contact", states Mr. Schiel. "He knows his company's plans for new products in the development stage as well as final production plans. He can discuss his production requirements with salesmen and get the benefit of their experience on cost-cutting assembly ideas."

And, as Mr. Schiel's company has proved, advertising

in **PURCHASING**—the purchasing agent's own magazine—can effectively pave the salesmen's way by pre-selling the P.A.

For further facts regarding this productive, economical, sales-making magazine, write **PURCHASING**, 205 East 42nd Street, New York 17, New York. Offices in Chicago, Cleveland, San Francisco and Los Angeles.



A CONOVER-MAST
PUBLICATION

You can't do business with American industry



. . . without an understanding of the Purchasing Agent's place in modern industrial procurement.

Seasoned and successful selling executives like Mr. Schiel know that the way to sales is through the front door, through the Purchasing Agent's office. They know that modern business has specialists in buying as well as in sales, that orders develop when these two get together, and in no other way.

Month after month this story is being told to management and sales executives in advertisements like the one at the left which appear in leading management, sales and advertising publications.

AMERICA DRINKS ITS WATER FROM PAPER CUPS — SAFELY



Clear, fresh drinking water is a welcome sight to many who discovered that no foreign land has such an abundance of pure drinking water as America . . . extra safe when served in convenient, single-service paper cups. Be sure you are helping to protect your employees' health by keeping one of these four famous brands near every cooler.

Aero PAPER DRINKING CUPS

ALSO AJAX  COLUMBIAN  PEERLESS 

LOGAN DRINKING CUP CO. U. S. ENVELOPE CO., SAN FRANCISCO DIV.
Worcester 5, Mass. San Francisco 7, Calif.



Divisions of

UNITED STATES ENVELOPE COMPANY

Buyers Still Make Markets

(Continued from page 97)

the industrial field as well as in consumer goods.

Purchasing departments have no legitimate concern with speculative profits. They exist and operate to meet known or carefully estimated requirements, and beyond the prudent forward coverage that a sound purchasing program entails, the purchasing agent should stick to his proper job of procurement. To be sure, market trends and manufacturing quotas are both factors in any decision as to inventory buying, and there is frequently a very fine line of distinction between forward purchasing as an investment in continuous, economical production and speculative purchasing for inventory profits. Inflationary markets have a way of making any purchase look good. It seems as though you could buy with your eyes closed and not go wrong, but the error, if any, had better be on the conservative side if you expect to be in business after the inflationary boom.

Avoid Fictitious Demand

There is no profit in any purchase until the goods are put to use. Inventory profits are a purely theoretical figure, but the loss from inventory depreciation is very real. In the period following the first world war, the losses from this source alone wiped out the greater part of war profits, put hundreds of concerns out of business and scores of apparently smart purchasing men out of jobs. It created a surplus problem that persisted well into the great depression. The irony of that situation lay in the fact that the very demand which helped to build up inflationary valuations proved in the end to be a fictitious demand. If we remember that our present effort is to combat inflation as well as to keep our companies on an even keel, we shall not pyramid demand to a point beyond the reasonably sure outlet for the product.

But taking an inventory loss is a surgical operation; maybe your company can take it. An unwise investment in machinery or equipment at inflated price levels, on the other hand, is a cancerous appendage that remains to plague us with excessive costs for years to come, a permanent liability. Reconversion entails a lot of new construction and tooling; watch your capital account with particular care.

Inflation is the child of optimism,

(Continued on page 376)

THE SEYMOUR MANUFACTURING CO.

SEYMOUR, CONNECTICUT

In the 65 years that "Seymour" has manufactured nonferrous alloys, service has reached practically every metal working industry. In this period, three major wars have drawn heavily upon and greatly developed the usefulness of these alloys. Purchasing Agents

should revise their records to include them as major elements of product design, and study their characteristics so as to be able to make accurate recommendations to engineering and mechanical departments. Glad to furnish information promptly.

*Nonferrous Alloys
Since 1878*



INSURANCE POLICY

for
Production

SUGGESTIONS FOR THE APPLICATION OF Stuart's ThredKut

CHARACTERISTICS OF OPERATION AND MATERIAL
TO COLUMN ONE ONLY NOT TO MIX OTHER WHEN TWO RECOMMENDATIONS

Per Cent of ThredKut Supplied	EACH COLUMN IS IN REFERENCE TO COLUMN ONE ONLY NOT TO MIX OTHER WHEN TWO RECOMMENDATIONS		THREDKUT		TOOL		MATERIAL	
	Hardness of Material	Carbon Content of Steel	Cutting Speed of Steel	Depth of Cut	General	Screen Match	General	Screen Match
Very Low	Very Hard	Very High	Very Fast	Very Light	General	Screen Match	General	Screen Match
Low	Hard	High	Fast	Light	General	Screen Match	General	Screen Match
Medium	Medium	Medium	Medium	Normal	General	Screen Match	General	Screen Match
High	Soft	Low	Slow	Heavy	General	Screen Match	General	Screen Match
Very High	Very Soft	Very Low	Very Slow	Very Heavy	General	Screen Match	General	Screen Match

THROUBLE

DECREASE THREDKUT

INCREASE THREDKUT

TOOL

MATERIAL

Copyright 1933 D. A. Stuart Oil Co., Ltd.

* If you haven't a copy of the ThredKut Chart, write us—we will gladly send you one, without obligation.

STUART'S ThredKut Heavy Duty Cutting Oil has played an important part in solving many of industry's toughest metal working problems. Reference to the time-tested ThredKut Chart* has insured the proper application of this versatile product in many production emergencies. Alert production executives will find these aids of great help in answering troublesome metal-working problems. D. A. Stuart Oil Co., Ltd., 2727-31 N. Troy Street, Chicago 23, Illinois.

D. A. Stuart Oil Co.
LIMITED
ESTABLISHED 1865
Stocks in Principal Metal-Working Centers



Buyers Still Make Markets

(Continued from page 374)

which is the peculiar genius of American business. The antidote to inflation is not necessarily pessimism or lack of confidence, but a little sober, realistic caution, and this is the unpopular role which the purchasing agent is called upon to play. He may draw a few hisses, like the bewhiskered villain in the old 10-20-30 melodrama, and in the same way that reaction may be a tribute to the realism of his performance.

The Search for Value

So, in their constant search for value, purchasing agents help to make markets, to keep some reasonable balance of value between the dollars that they spend and the goods which they get in return. In seeking to conserve the purchasing power of their company's dollar, they maintain the integrity of the national currency.

Chapter I of the standard textbook on purchasing is entitled "The Significance of Industrial Procurement". It deals with basic economic influences, price policies, labor legislation, and the distribution of wealth. Written before the war, from an economic viewpoint, and for classroom consumption, I dare say that it seemed to many practical buyers like an attempt to read a lot into this prosaic job of ours that did not really exist. But time and the fuller consciousness of our functional responsibility now show it to be indeed a penetrating and far-sighted appraisal of what purchasing can and will do as an essential part of industrial management.

For purchasing does have a significance far beyond what many men can see from within the confines of the purchasing office itself. We need not advance this as a bald assertion or self-promotional claim. We have the highest testimony from those who are responsible for our national economic health and who are keenly aware of the contribution which purchasing can make toward the attainment of those objectives.

During the war, Donald Nelson as head of the War Production Board declared that purchasing agents, more than any other group in industry, had made it possible to meet the unprecedented quotas and schedules of that gigantic program, in the face of equally gigantic and unprecedented difficulties of supply.

Only a few weeks ago, John Snyder, Director of Reconversion, declared that purchasing agents have

(Continued on page 380)



If you need fabricating bar alloy stock now and are willing to adapt top quality material priced at or near carbon steel prices—here is real opportunity. Over 25,000 tons of hot rolled and 25,000 tons of cold finished carbon and alloy steel bars are ready for immediate shipment to you. The stock is available in standard sizes, shapes, but is of above average grades. Accordingly it has been priced at levels such as to insure its quick employment to meet America's postwar needs. For details on F.O.B. locations, sizes, quantities and shipping arrangements contact your nearest W. A. A. Regional Office below . . . or clip and mail this coupon.

VETERANS OF WORLD WAR II: To help you in purchasing surplus property from W. A. A. a veterans' unit has been established in each of our Regional Offices.

FREE INFORMATION

To War Assets Administration:

Please send me information on the availability and pricing of the following:

- Carbon and Alloy Billets, Blooms, Slabs, Rods, etc. ☐
 H. R. & C. F. Alloy Sheets, Strips and Plates ☐
 Stainless Steel Sheets, Strips, Standard Types ☐
 Valves and Fittings ☐
 Mechanical Tubing, Carbon and Alloy ☐

NAME..... TEL. NO.....

FIRM.....

ADDRESS.....

CITY..... STATE.....

157-5

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN
RECONSTRUCTION FINANCE CORPORATION AGENCIES

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Alundum, 38 Alundum and 57 Alundum "B-E" bond grinding wheels for sharpening tools and cutters of high speed steels and alloys of the Stellite type.

Open Structure grinding wheels for the jobs that require extra heavy stock removal or extra coolness of cut or both.

Fine grit grinding wheels for producing the high surface finish that greatly lengthens cutting tool life.

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Vitrified bonded diamond wheels for the off-hand grinding of single-point cemented carbide tools.

Resinoid bonded diamond wheels for sharpening multi-blade carbide tools such as milling cutters and the like.

Crystolon vitrified wheels (regular and Open Structure) for many roughing operations and for plants doing only a limited amount of carbide grinding.

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Mounted Points and Mounted Wheels are available in nearly 200 standard sizes and shapes in several abrasives and bonds.

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Name

Position

Company

Address

City, Zone, State

Buyers Still Make Markets

(Continued from page 376)

"a key responsibility" for keeping prices down and stabilizing the industrial balance during this critical period while inflationary pressures are high and will continue to mount.

Wendell Berge, Assistant Attorney General, is authority for the statement that industrial purchasing policies are the determining factor in the question of whether our system of competitive enterprise will be preserved or whether we shall fall into a system of permanent government controls and regimentation.

These are statements that every purchasing agent ought to tuck in a prominent position over his desk. He ought to read them over again every time he gets a quotation including another 5% advance, with perhaps an escalator clause attached. For it is only through a full realization of the significance of our job, and by working at it with the larger objectives in mind, that we can meet our responsibility of buying in an inflationary market, maintaining a balanced economy in which we stand ready to pay fairly for what we buy and get value for what we pay.

1 1 1

Purchasing Castings and Forgings

(Continued from page 111)

against the other. The weight per piece divided into the total weight should equal the number of pieces received. The number of pieces divided into the total weight of the shipment should give the weight per piece.

If there are discrepancies in any such checks, it can be known that there is definitely something wrong in receiving or in the product. If the weight per casting or forging is above or below the specified weight, there is proof that the vendor is at fault. Either the wrong material was used to make the part, or the wrong pattern was used, or some other error was made by the vendor. This also has an important bearing on cost, since castings and forgings may be purchased either by the piece or by the pound.

Shipping Information

The best safeguard against incorrect receiving is to have all needed information on the shipping tags. Containers should be marked by the vendor with the following facts:

(Continued on page 382)



BUCKEYE BEARINGS

Stock Sizes or "Specials"

... to meet any requirement

REGULARLY STOCKED in 1088 sizes ranging from $\frac{1}{4}$ " x $\frac{3}{8}$ " x $1\frac{1}{4}$ " to 4" x $4\frac{1}{2}$ " x 6", Buckeye's fully finished ready-to-use stock bearings are the time proved answer for most requirements. For others, Buckeye "Specials" furnished in any recognized bronze bearing analysis; and in any ID, OD and length; slotted, split, drilled or flanged; plain, graphited, or with machined oil grooves, will meet

exactly, your own particular, individual needs.

Manufactured from selected materials under our exacting laboratory and metallurgical control, these bearings measure up fully to Buckeye's exacting specifications. Each is a quality product, free from porosity and accurately dimensioned within the required limits assuring speedy, easy assembly, and long, efficient service. Let us quote on your requirements.

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BRONZESMITHS

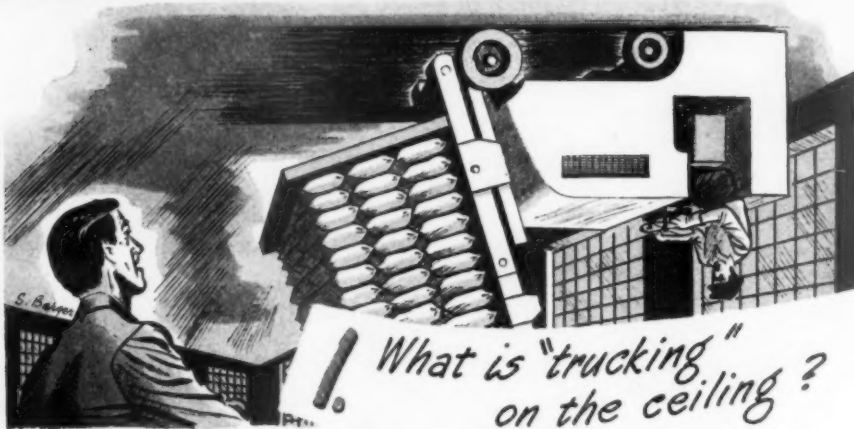
SINCE 1900

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BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT
IN ANY RECOGNIZED BEARING METAL ANALYSIS

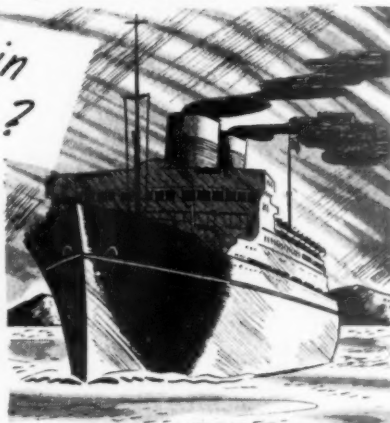
CAN YOU GUESS THE ANSWERS?



In many factories the ceiling is waste space. It can be converted to usefulness with hoist and trolley combinations and cranes. They move materials on monorails and tracks like trucks move them on the floor. Hoists, Trolleys and Cranes made by Acco's Wright Manufacturing Division are ideal for "trucking" on the ceiling.

2. How many valves in an ocean liner?

A ship cannot run without valves. They control the flow of steam, oil and water. A 20,000-ton liner, for example, has between 8,000 and 12,000 valves, depending on the type of propulsion. Many ships are equipped with valves by Acco's Reading-Pratt & Cady Division.



3. How many feet of wire in an innerspring mattress?

An innerspring unit for a top quality mattress has more than a third of a mile of wire. In an Owen Woven Unit, for example, there are 925 hand woven coils and 1800 feet of wire. Acco's Owen Division makes superior spring products for the mattress, furniture and other industries.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain • Wire Rope • Aircraft Cable • Fence • Welding Wire • Cutting Machines • Castings • Wire • Springs • Lawn Mowers • Bolts & Nuts • Hardness Testers • Hoists & Cranes • Valves • Pressure Gages • Automotive Service Equipment

ACCO



AMERICAN CHAIN & CABLE

BRIDGEPORT
CONNECTICUT

Purchasing Castings and Forgings

(Continued from page 380)

vendor's name, purchase order number, quantity shipped, part number, pattern or forging number, gross and net weights, and any other facts that will aid in identifying the shipment. Additional facts may be included such as: item number on purchase order, quantity ordered and quantity shipped, weight of tare, etc. Where own containers, skids, or pallets are sent to vendors for reshipment with completed castings and forgings, blank tags with spaces for desired information should be sent with the empty containers.

1 1 1

Power, Light and Communication Service

(Continued from page 108)

In all these communications problems, it has been found that the utilities were most cooperative and helpful, both in analyzing our proposals and in making suggestions of their own. The value of having communications people in the procuring agency lies not so much in checking utility recommendations as in keeping continuous watch over the varying requirements and in the ability to adapt new developments to such requirements.

Of course instances have arisen where it was found necessary to request a type of service not being offered by a communications utility. In such cases, expert technical and rate people were necessary to present the case first to the utility involved, and, only in case of refusal, to the proper regulatory commission for its adjudication. It has been the experience of the Government that a properly staffed group of utility and rate engineers has more than paid its way in obtaining better and more economical service.

Industrial Applications

In its procurement of utility services, the Government acts simply as a customer purchasing a service, exactly like any other customer. The authority of the Government to regulate the rates for certain types of utilities services is separate from, and has no bearing on its procuring function.

Consequently, the problems and solutions here outlined are equally applicable to other than Federal

(Continued on page 384)

EASY FORMABILITY

**N-A-X/ HIGH-TENSILE STEEL
HAS ALL SIX — KEEPS ALL SIX**

- HIGH STRENGTH
- EXCELLENT WELDABILITY
- HIGH FATIGUE-RESISTANCE
- GREAT IMPACT TOUGHNESS
- HIGH CORROSION-RESISTANCE



16-inch car wheel, cold-stamped in three operations (two draws and one flange) with no intermediate annealing. Made of 1/4"-thick N-A-X HIGH-TENSILE plate.

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Hack and Coping Saw Blade Specialists Since 1880

Power, Light and Communication Service

(Continued from page 382)

Government situations. Large industrial concerns with plants scattered over various parts of a city may well meet a problem similar to the inter-agency telephone situation in the District of Columbia. Private concerns with plants in various parts of the country may well consider inter-city telephone and teletype networks. Many concerns have already done so. Airlines and railroads come readily to mind in this connection.

Any large concern buying substantial amounts of power or communications services will often meet problems similar to those mentioned. The fact that utilities services are usually bought at legally fixed prices, and are available usually from but one source, does not mean that the task of procurement should degenerate into one of order writing. To the contrary, the procurement of utility services often presents more problems, and more opportunities for achieving economies, than does the purchasing of competitively sold commodities.

* * *

Safety in Construction

(Continued from page 135)

erations is the control of fumes and toxic gases after blasting. The only dynamite allowed for underground use is "fume Class 1", a type which develops a minimum of toxic materials. Even so, large quantities of irritating and toxic gases and fumes are produced in its explosion. The gases formed are chiefly nitrogen, oxygen, carbon monoxide, carbon dioxide, oxides of nitrogen, methane and aldehydes. In most cases only carbon monoxide and the oxides of nitrogen were found toxic in quantities. These two gases are usually formed simultaneously and an increase in one generally means an increase in the other. After a complete study of the problem, necessary provisions for ventilation must be devised to properly counter these hazards.

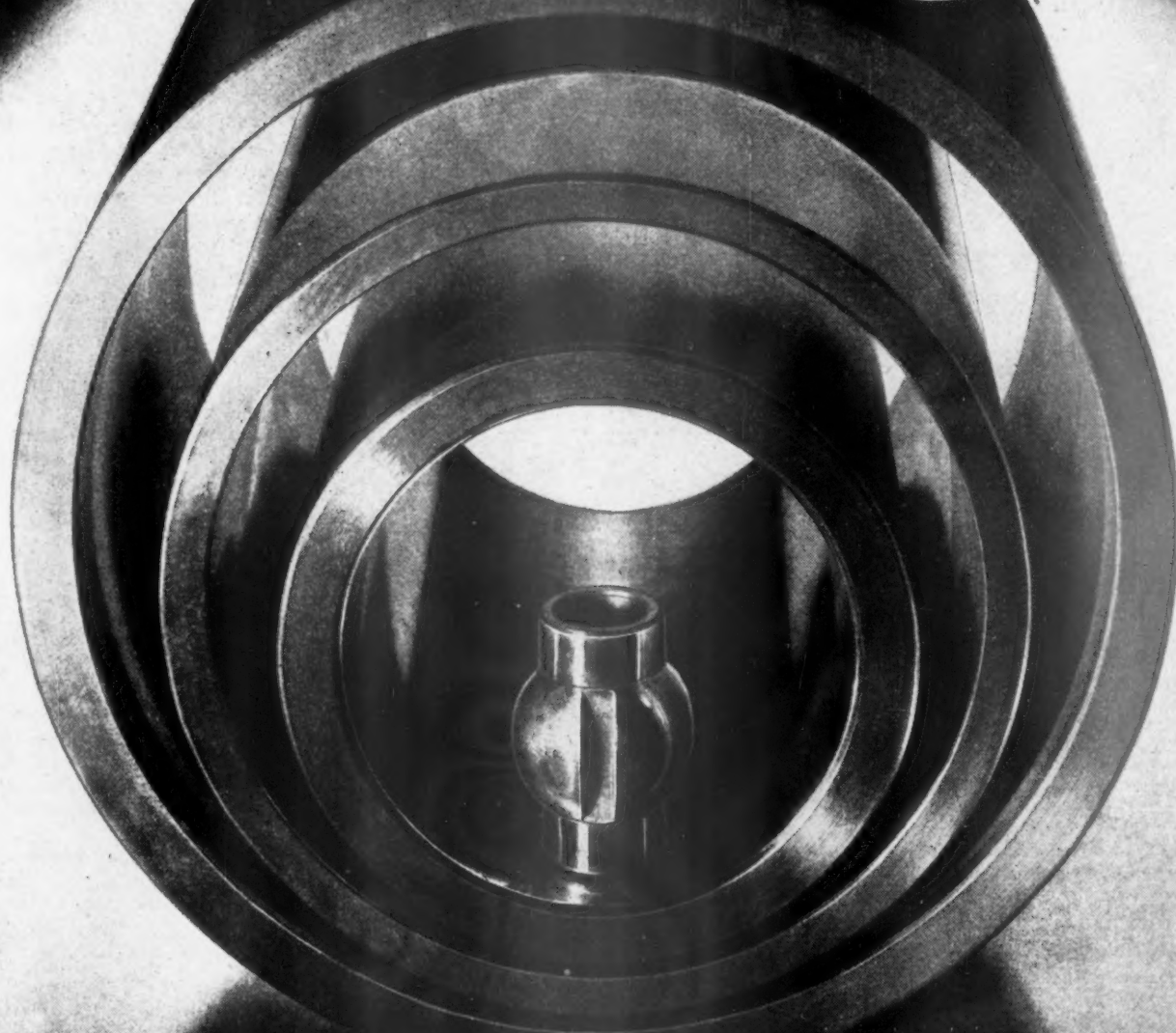
Foresight Prevents Accidents

Unnecessary toll of lives and property damage are chargeable to absolute lack of proper advance design and planning. Safety work is carried on during construction to prevent accidents which may cause

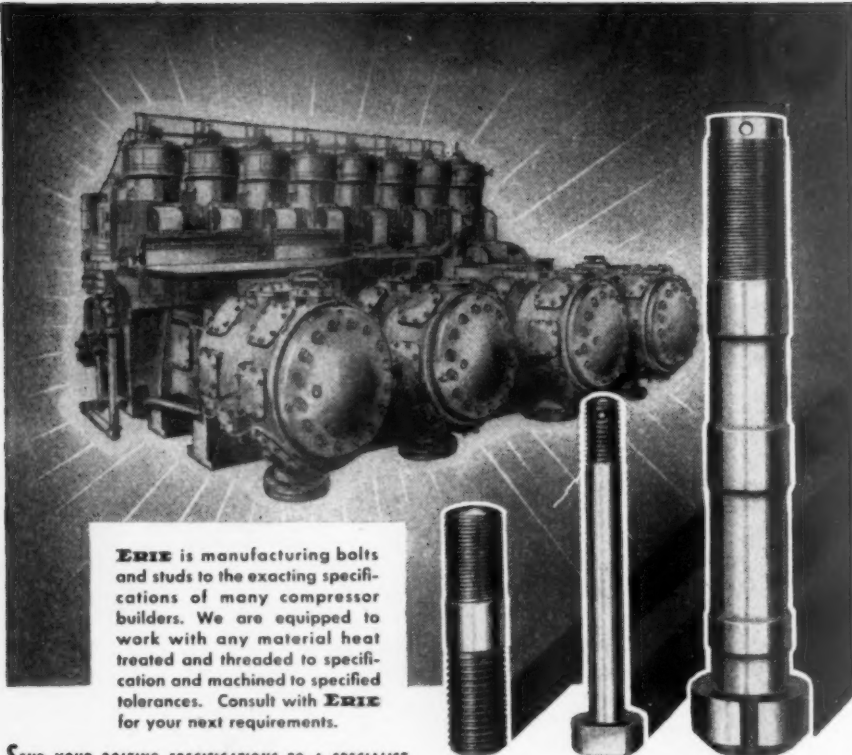
(Continued on page 386)

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Safety in Construction

(Continued from page 384)

serious injury and damage which impedes construction.

It is true that many contractors have lost faith in accident prevention have developed an aversion towards safety engineers. To a great degree this can be laid to the door of the construction industry because of their failure to provide opportunities and facilities for training safety engineers. The solution of actual and potential accident problems in the construction field requires technical training, skill and practical experience.

The old adage, "hindsight is always good sight" is true. But, if we are genuinely desirous of controlling the enormous waste caused by accidents in construction, both foresight and hindsight should be utilized in discovering potential accident producing circumstances and thus making possible the correction and elimination of the dangerous hazards and conditions.

Foresight in the form of careful regular inspection to ascertain conditions in the construction industry is particularly important. Increased inspection and educational programs must be carried on by well trained personnel. But to do the job completely the public must be in on it too. It must be made to realize the vast economic loss which construction accidents represent. A schedule for rigid inspection must be set up and the builder or contractor must recognize and accept the tenet that an efficient job is a safe job.

1 1 1

SCRAPPED PLANES YIELD LARGE QUANTITIES OF LEAD

Lead is being recovered from surplus combat aircraft in quantities sufficient to make an important contribution to the Nation's supply of this still critical metal.

Approximately 1,000,000 pounds of lead is expected to be recovered by the War Assets Administration from surplus bombers, fighters and other tactical type aircraft. These planes have no further use either for flight or non-flight use and are now being scrapped and salvaged by War Assets so that aluminum and other metals of which they are made can be made available for civil uses.

The lead was used as control surface counterweights on the planes and some types yield over 100 pounds of the metal.

All lead recovered in the scrapping program is turned over to the Metals Division of War Assets where it is sold on an allocation basis to commercial users.

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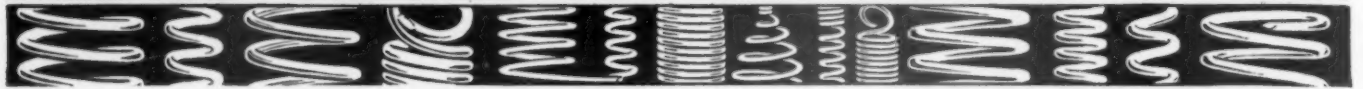
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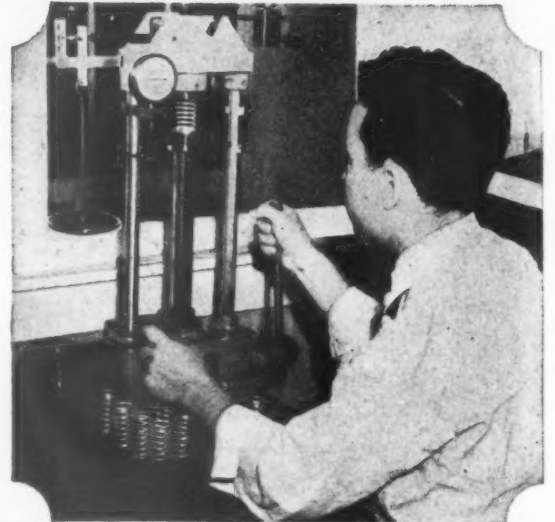
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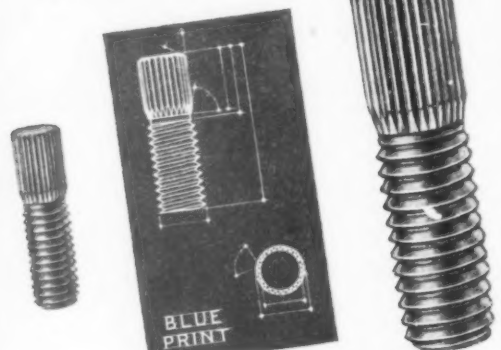
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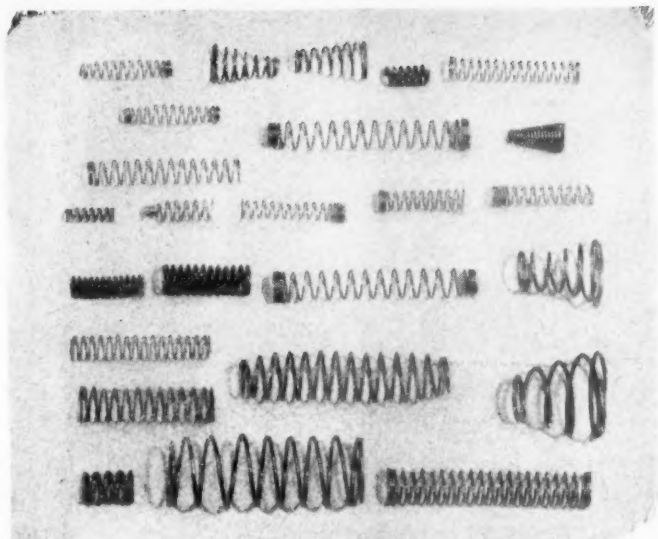
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Justrite Safety Cans are sturdily constructed of heavily coated 24-gauge steel, double seamed and soldered. Dome is rounded—no channel above seam to catch dirt or liquid. Non-spill pouring lip. Cans are finished in high-gloss, baked-on red enamel for easy identification. Come in 7 sizes from 1 pt. to 5 gal. Sizes 2-3-5 gal. have "swinging" handle; other sizes with trigger handle.



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Easy to Fill, Pour and Carry

The non-spill pouring lip on this Justrite Safety Can is located on outer rim of nozzle and permits pouring directly into even a small opening without spilling or splashing. Handle in center, balances perfectly for easy carrying. Spout cap closes automatically, preventing leakage and evaporation.



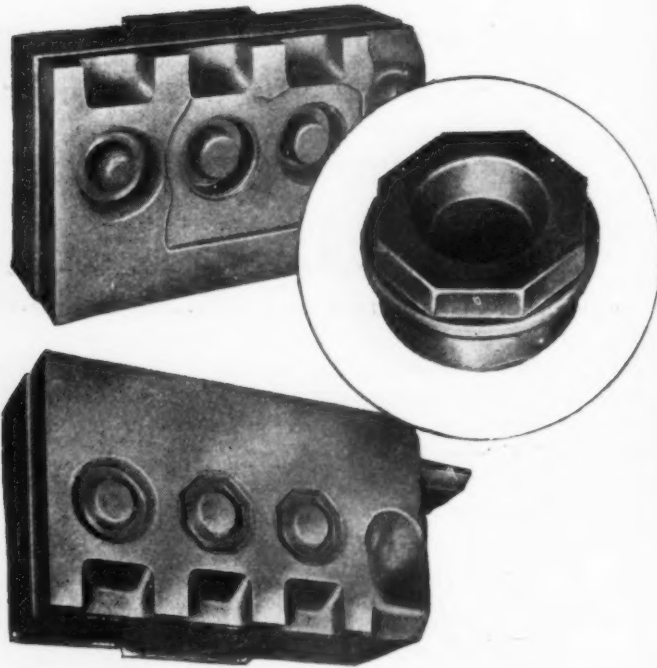
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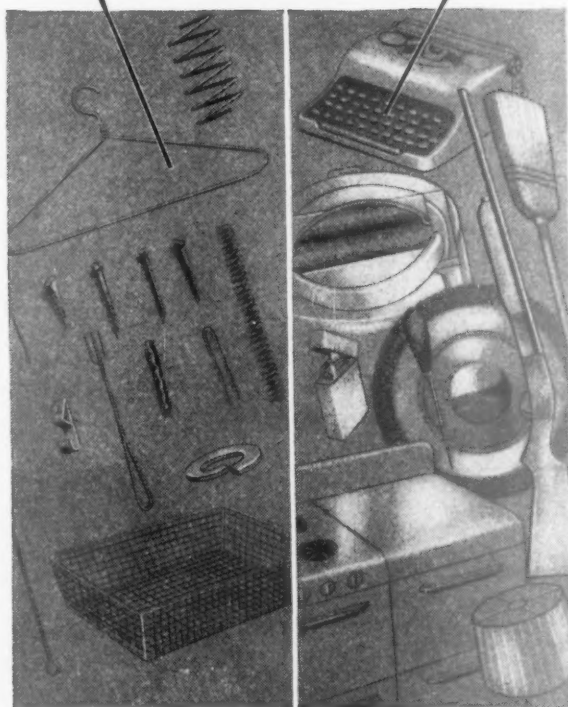
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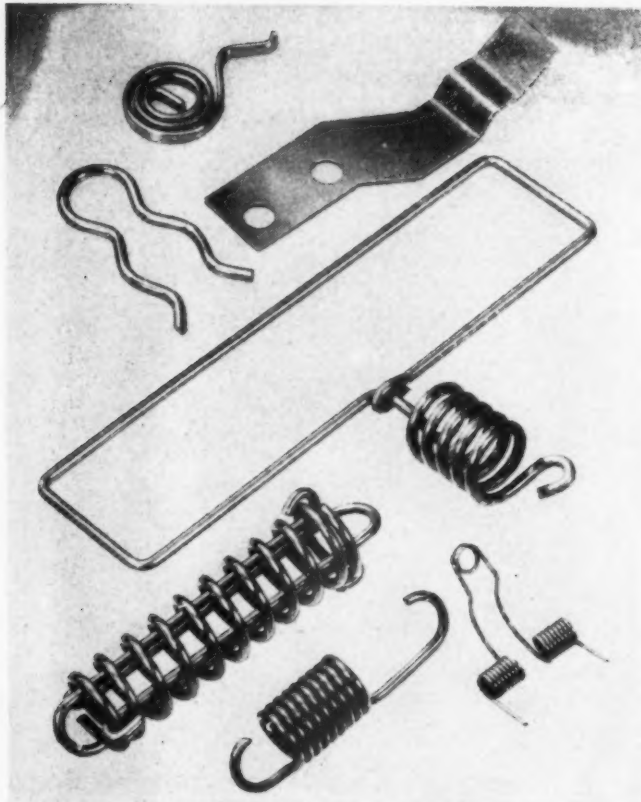
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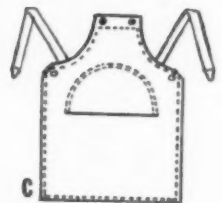
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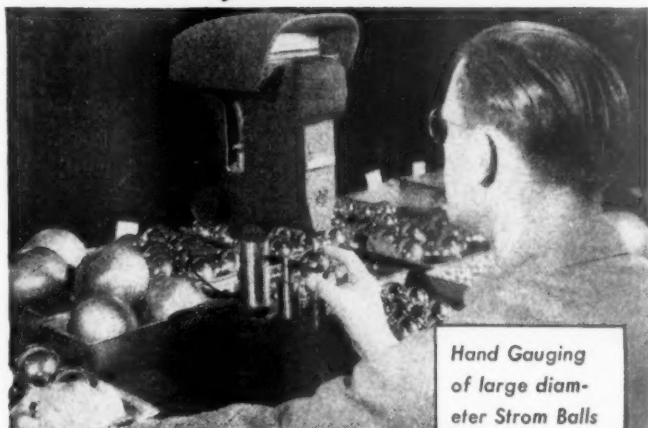
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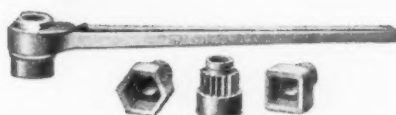
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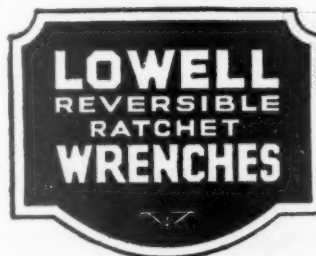
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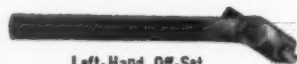
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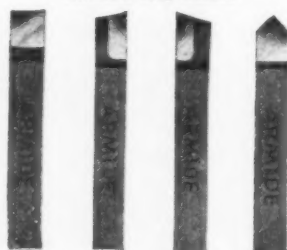


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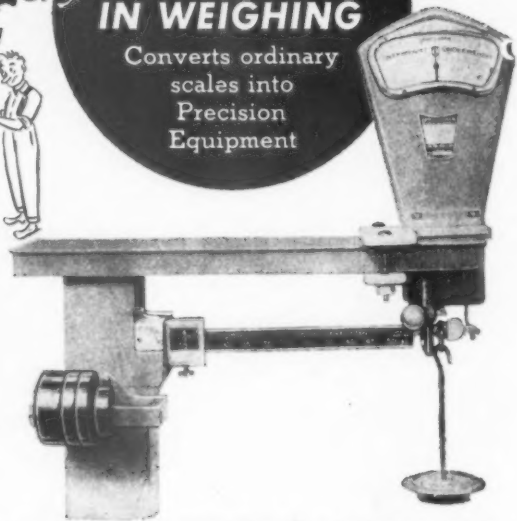
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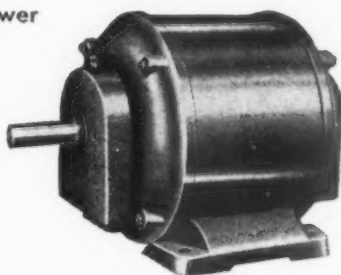


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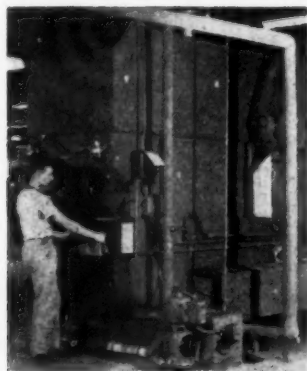
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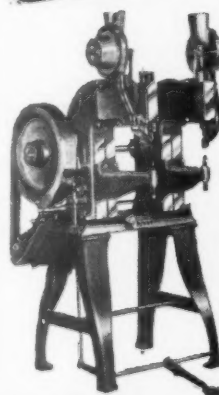
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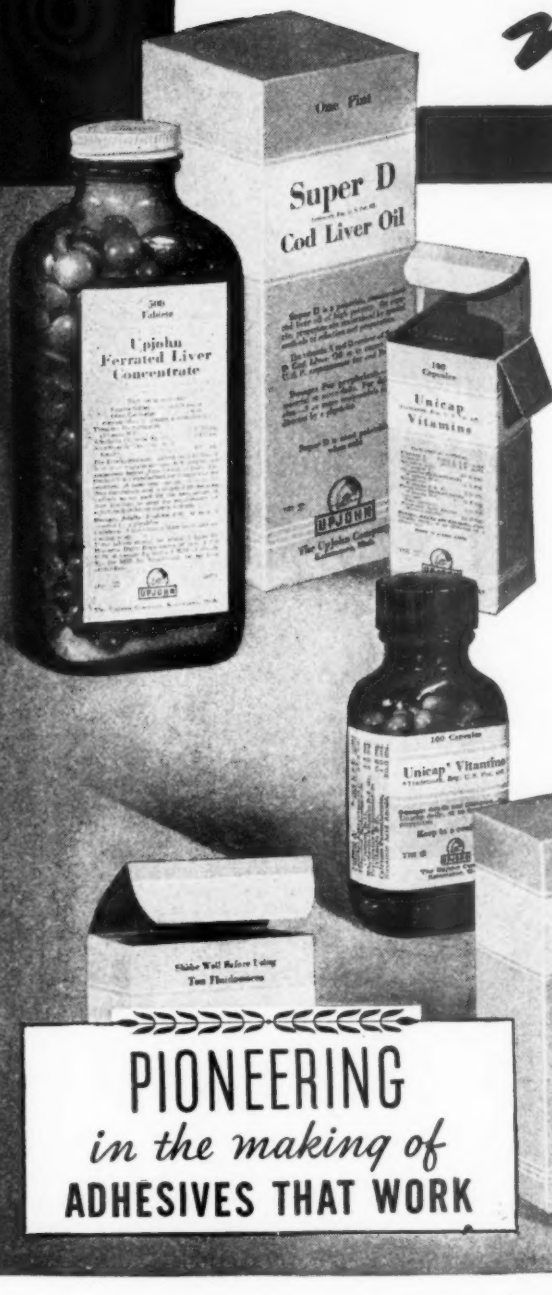
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CLASSIFIED ADVERTISEMENTS

Wanted PURCHASING AGENT

Must have executive ability and wide experience in the procurement of aircraft supply. Excellent opportunity with large commercial airline. Salary open. Send complete history of your experience together with your personal data and qualifications. Write Box #1032, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

POSITION WANTED — Purchasing agent — 9 years purchasing background. Exceptional experience industrial and mill supplies for national concern. Capable organizer and office manager. 2 years college. Age 29. Salary approximately \$5,000.00 Write Box #1036, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

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An electric utility company in the middle west has excellent opening for executive with right qualifications. Prefer engineer, under 40, with utility purchasing experience. Send particulars of education, experience and salary expected. Write Box #1031, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

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OPPORTUNITY

A Central Florida agricultural and industrial concern offers an excellent opportunity for an experienced and aggressive purchasing agent. Permanent position, excellent environment, diversified lines. Write Box #1034, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

Wanted

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Experience plastics, metals, machinery, etc. Nationally known company manufacturing small consumer articles. Salary \$8,000. Write Box #1028, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

HELP WANTED — POSITIONS WANTED — SURPLUS MA- TERIALS AND OTHER CLASSI- FIED NOTICES

RATES for Help Wanted, Surplus Materials and similar notices — \$7 per inch. One inch minimum space. RATES for Positions Wanted notices are 6¢ a word. Allow seven words for box number address. Please send cash with order to avoid bookkeeping.

LIFT TRUCK AT A BARGIN PRICE

Here is an excellent buy. A Model PHLT Brownie Forked Lift Truck, in top-notch condition, together with 195 40" x 60" wood pallets, for only \$1,775 cash, F. O. B., Woonona. Lift truck has capacity of 3,000 pounds, overall height of 83" when loaded and 108" lift. Forks are 30". Powered with a Ford motor, this lift truck was recently reconditioned and has been given good care at all times! It is economical to operate and maintain. Original price of truck and pallets was \$3,395. Get in touch with us today.

McCONNON & COMPANY

Winona,

Minnesota

Wanted

MATERIAL CONTROL MANAGER

Manufacturer of aircraft and commercial products Philadelphia area requires executive, experienced and fully conversant with vendors and supply sources, capable handling management of company's purchasing, stores, sub-contracting and outside procurement depts., and meeting competitive buying requirements. Write Box #1033, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

POSITION WANTED — Purchasing — Age 36 — family. Accounting education — 15 years varied experience including precision parts, stampings, castings, etc. Read prints — can direct and get along with others — locate anywhere. Write Box #1035, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

POSITION WANTED — Young married man desires position as Purchasing Agent or Assistant. Eighteen years shop experience. Five years purchasing. For complete details write Box #1038, PURCHASING, 205 East 42nd Street, New York 17, N.Y.

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REMBRANDT
SIGNATURE
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A Fine Painting



KOVEN

Has Been the Hallmark of Superior

INDIVIDUALIZED EQUIPMENT PARTS

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In the world of art, a Rembrandt signature represents fine workmanship and superior quality. The name KOVEN, in the world of industry, also signifies superior quality and fine craftsmanship.

For over 65 years KOVEN has designed and manufactured individualized equipment parts. Leading manufacturers know that KOVEN can make a part, or parts of their finished product to exact specifications...and with greater efficiency and economy than they could be made within their own plant.

Consult a KOVEN engineer. His advice is backed by long practical experience. There is no charge for this service. Call or write to KOVEN.

Illustrated below: filter made by KOVEN for a manufacturer of gasoline equipment, a separator completely welded and made of herculeum for a manufacturer of presses, a fabricated steel base for a manufacturer of hydraulic presses.

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Super Smooth

FINISH FOR INTRICATE PLASTIC MOULDS



No. 8—A light weight tool, but precision built throughout. Speed: 18,000 r.p.m. Weight: 2 lbs., 6 oz. 1/20 h.p.

High Speed, Perfectly Balanced Dumore Hand Grinders Assure Extreme Accuracy on Finishing Operations

To give thermo plastic products their highly polished surfaces, the moulds in which they are made must be super smooth. First, machine marks and surplus metal must be removed from the intricate steel moulds, and then the required size and surface finish provided by highly skillful hand grinding and polishing.

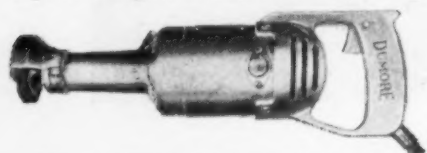
On these operations, The Chicago Molded Products Co., which produces thousands of plastic products weekly, has used Dumore No. 8 Hand Grinders with great success. For the light weight and perfect balance of these Dumores, their high speed and smooth power, enable the operator

to remove material with extreme accuracy . . . to maneuver a variety of tiny mounted wheels and brushes in close quarters with surprising ease.

In countless other ways Dumore Hand Grinders are demonstrating daily their ability to take the short-cut ways to greater production. Find out how they can help *you*—write for Dumore's new grinding handbook, "Here's How." The Dumore Company, Tool Division, Dept. TE37, Racine, Wisconsin. (Eastern Sales and Service Branch, 13 East 40th Street, New York 16, N. Y.)



•No. 10—A tool with *double* the power of the average grinder. Speed: 22,000 r.p.m. Weight: 2 lbs., 15 oz. 1/10 h.p.



•No. 9—Powerful, smooth handling, yet gets into tight quarters easily. Speed: 15,500 r.p.m. Weight: 7½ lbs. ¼ h.p.

DUMORE

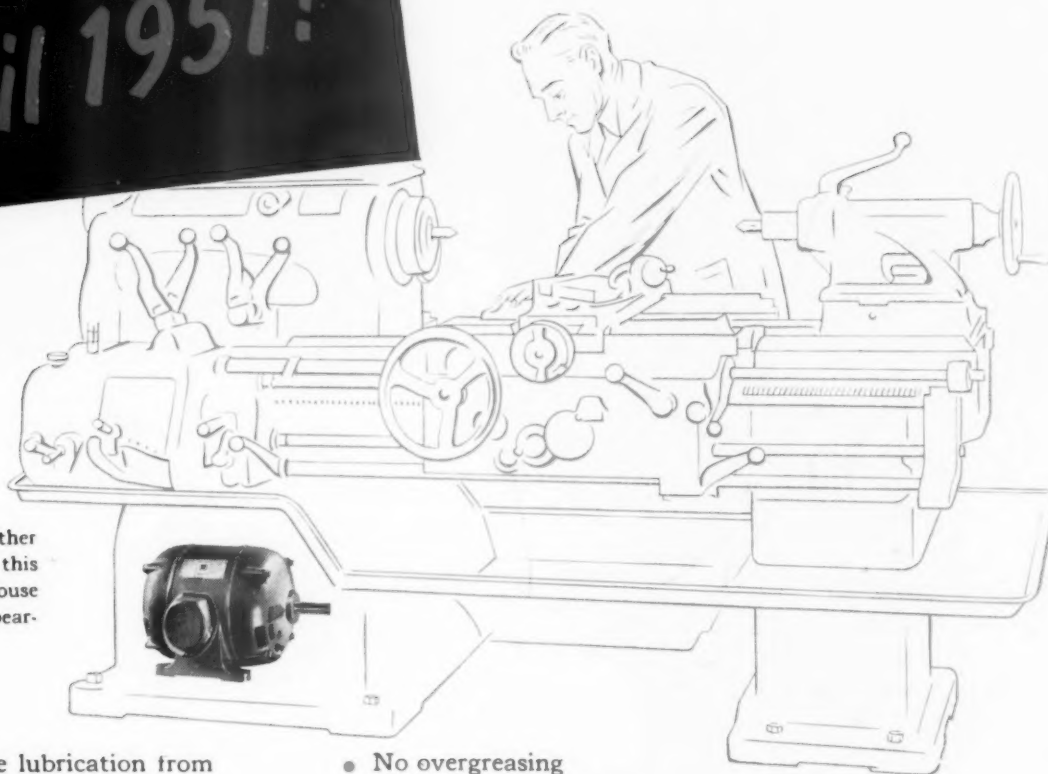
PRECISION AND HAND GRINDERS

Sold by Authorized Industrial Distributors in All Principal Cities

MOTORS YOU CAN FORGET

until 1951!

Until 1951, don't even bother to look at the bearings of this motor—if it has Westinghouse prelubricated, sealed ball bearings.



When you eliminate lubrication from the maintenance program for motors for a period of 5 years or more, they require practically no attention whatever—and this is now true of Westinghouse squirrel-cage motors up to 20 hp, frames 203 to 326 inclusive.

The prelubricated, sealed ball bearings available only in Westinghouse motors in Types CSP and CS, need not even be inspected until after they run 5 years or more. They have run in operation tests for longer periods than this, bringing large savings in maintenance costs as well as other advantages—

- No overgreasing
- No "skipped" bearings
- No grease contamination
- No grease seepage
- No unreplaced pipe plugs

With this freedom from frequent lubrication, a far greater freedom is permitted design engineers and plant layout engineers. They can now place motors advantageously for efficient operation—unhampered by questions of accessibility and ease of greasing. For further details, write for Bulletin B-3554 and Descriptive Bulletins 3100-CSP and 3100-CS-1, to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-21376

Prelubricated, sealed ball bearings are available in Types CSP and CS Motors up to 20 hp.

Westinghouse

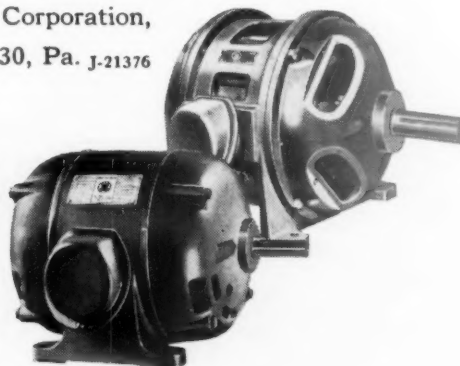
PLANTS IN 25 CITIES... OFFICES EVERYWHERE



Squirrel Cage Motors

PRELUBRICATED			
INSPECT BEARING AFTER 5 YEARS			
MOTOR TYPE	SEE INST. LEAFLET		
CSP-CWP-CIP	3100-CSP-1		
CIP	3000-CIP-1		
CWP-CWP-CWP	3000-CWP-1		

Another Westinghouse "first"—this label identifies motors that you "don't lubricate for 5 years or more"



THINK...

what this would mean to You!

SATURDAY, APRIL 11, 1936

Nation's Supply Houses Close Doors Forever Industry Alarmed

Leaders Predict Higher Operating Costs and Advanced Prices as Result

FOR HALF a century some people, unacquainted with the facts and figures, have prophesied the passing of the industrial distributor; some even have advocated it. However, merely to consider what the end of the distributor would mean to your individual business is to see how absurd is the idea.

The value of the distributor to industry is too well recognized to require argument. Yet, with respect to the cost of the distributor's function there is much misunderstanding. Applying the axiom—"you can't get something for nothing", too frequently buyers jump to the conclusion that they pay extra for the conveniences of the distributor's service. If, at times, they are able to secure a slightly lower price through direct negotiation, they find it easy to convince themselves that this represents a saving.

However, as countless buyers know, such

a "saving" is more often apparent than real. It may be eaten-up quickly by the excessive costs of carrying adequate stock, and the multiplication of orders and resulting load of purchasing detail, which the buyer must assume.

Thoughtful consideration of the facts is certain to show that nobody pays extra when the distributor takes a profit. *Actually his profit is a small percentage of the savings which he effects for both seller and buyer.* The seller gets merchandise into the buyer's hands with less expense. The buyer gets the benefit of what amounts to cooperative purchasing and warehousing facilities for the major part of his requirements... which means a large saving over what it would cost to carry adequate stocks in his own plant.

Buyers who fully utilize distributors' facilities benefit most and pay no more.

COMPARE!			
BOUGHT DIRECT		BOUGHT FROM DISTRIBUTOR	
Price paid for Supplies bought Direct from Mfr.		Price paid for Supplies bought from Distributor	
Freight, trucking etc. to plant storeroom		Store-Door Delivery	
Increased costs in Purchasing, Labor, Warehousing		Lower Purchasing, Labor, Warehousing costs	
TOTAL ACTUAL COST of Industrial Supplies bought Direct from Manufacturer		TOTAL ACTUAL COST of Industrial Supplies bought from local Distributor	

Makers of Jenkins Valves for more than four-score years, we know that Jenkins' customers are served better and more economically through Industrial Distributors than they could be through direct negotiation. Further, we are convinced that Industry can profit by fuller utilization of local Distributors, and in this advertising present some of the sound reasons for this conviction.

Jenkins Bros

DISTRIBUTORS SERVE INDUSTRY ECONOMICALLY